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SCHOOL**

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terrain

TRAIL OF THE YEAR

Britain's most popular
trails revealed

How to dial your brakes

The schoolkid hitting 50ft jumps

Wales's pump track playground

How fancy footwork can make you faster

BIKE TEST SPECIAL

DREAM BIKES

Santa Cruz Hightower Vs Intense Primer 29

Cutting edge hardtails from
Specialized and Norco on test

**BEST
WINTER
CLOTHING**



Jackets &
trousers
on test

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GKTV Live Ride Review – July 2019



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W H Y T E
G R E A T B R I T I S H B I K E S



M6 - TRAIL



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#IRIDEENVE

M7 - ENDURO



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mbr JANUARY 2020

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Trails are literally the foundation of mountain biking, without them we'd be riding the road, so it's only right that we take time each year to honour the best new singletrack. You've agonised for months over who should win the commercial and volunteer-built trails categories, cast your votes, and now it's time for the big reveal.

ON THE COVER

KC Deane enjoys the ultimate riding season, in Squamish, British Columbia, Canada.
Photographer: Mattias Fredriksson



ON THE COVER

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ON THE COVER

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Two of America's most desirable bike brands go head to head, with the Santa Cruz Hightower CC X01 taking on Intense's Primer 29 Pro. On paper it's hard to tell these two apart, with near identical geometry, 140mm travel and carbon frames, but real-world testing leaves us with a clear winner

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to help you rule when
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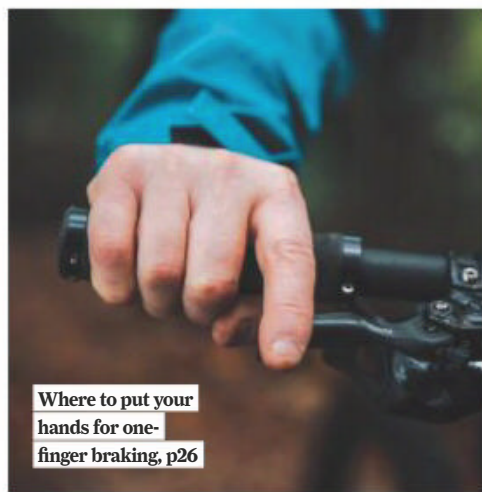
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Get started mountain biking with basic brake set-up: here's how to get your lever position right, where to put your hand and how many digits to use

ON THE COVER

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Riding technically challenging terrain at your limit but staying in control is about as rewarding as it gets on a mountain bike — it makes you feel like a trail god. But why do some riders make it look easy and others struggle? Here to tell us why is Andy Barlow from Dirt School



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Introducing Pump Track Wales in Rhayader, mid-Wales, the biggest track in the country and a place we all need to go to feel the flow

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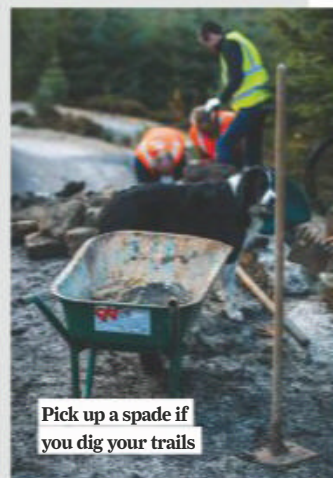
Photographer Andy McCandlish 'discovered' Harris... well, not quite, but when he went there for the first time over a decade ago he found singletrack by the mile, deserted trails and a new spiritual home

Trail of the Year

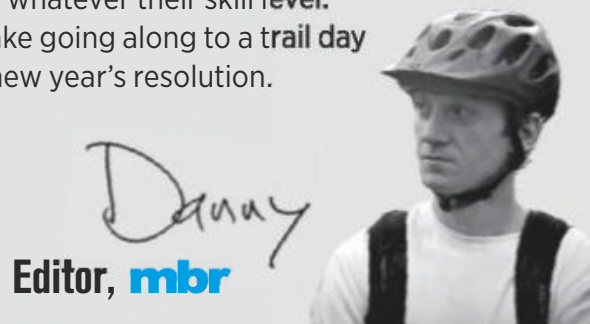
Volunteers, we salute you!

It might surprise you, but this is one of my favourite issues of the year to work on. Yes, we might be sloshing through the middle of one of the wettest winters for ages, but it's also the time of year when we reveal the winners of our Trail of the Year awards. They were created with the aim of rewarding and recognising the hard work and dedication of those individuals and groups working tirelessly to create new trails and maintain existing trails. This year you've voted for two truly worthy winners, in very different surroundings and offering very different experiences, although both share a common objective. Find out who they are on page 46.

These awards also have another goal; inspiring more of us to park our bikes and lend a hand, however occasionally. So if you haven't done so before, I urge you to get involved with a local group, even if it's just for a day a year. At this time of year, when it's so miserable outside, going trail building can often be more fun than actually riding. And it's as rewarding as it is exhausting. Clearing drainage channels, trimming foliage, fixing flow — it's surprising how much you can improve a trail with simple upkeep, particularly when there's a good crew of volunteers. You don't need to add jumps or imposing berms; subtle changes can have a profound impact on everyone's enjoyment of a trail, whatever their skill level. So make going along to a trail day your new year's resolution.



Pick up a spade if
you dig your trails



Editor, **mbr**

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Big picture

The Val Veny, just west of Courmayeur in Italy, is one of the most breathtaking places on Earth. This scenery has drawn me back countless times, but the flip side to this magic was always to endure a slow slog up a wide track that climbs painfully to the Col de la Seigne. Yes, the scenery is gold, but the trail is bronze at best. But this day was different. Riding in from the La Thuile valley we dropped into the Val Veny, railing a ribbon of twisting singletrack that spiralled down to the valley floor. Finally I had found the trail that did this valley and its immense backdrop justice. It was a marriage made in heaven.

Dan Milner





Big picture

Mondraker just launched its brand new Crafty Carbon e-bike range over in Lousã, Portugal. Made up of ancient 'schist' villages and home to an 11th century castle, it's the location of the first round of the 2020 DH World Cup series and a brilliant riding spot, with tracks littering the dense forests in the area. The moody damp atmosphere here was a result of non-stop rain while testing the new Crafty RR model you can read about in the First Ride section on p38.

Sebas Romero



Big picture

Towering cliffs crowd the summit plateau; thousands of years of freeze and thaw has eaten away at their waists. Shards of rock lie deposited below, knotted to the hillside by hardy vegetation. Small grains of rock loosely secured in shallow earth. Too much force and the hillside shears away; get it right and our sticky rubber compounds carve the gradient, propelling bike and body. Scree is displaced, tumbling beneath the line for what seems like minutes, the sound softening as the fragments eject themselves out of earshot.

Tristan Tinn

The Buzz

START YOUR RIDE HERE

Edited by Jamie Darlow

GEAR

RIDES

FAST & FIT

INSPIRATION

GET STARTED



BEAUTY & THE BEAST

The stunning Elan Valley now has a whopping great pump track alongside miles of classic trails

Rhayader is a small town in mid-Wales with big plans; it wants to be the UK's premier mountain biking hub, and it's just taken one giant stride in that direction by opening Pump Track Wales (PTW).

Quite possibly the biggest of its kind in the UK, Pump Track Wales is certainly the first split-line pump track — nearly the first in Europe in fact, although one has just opened in Austria. That's important because it means you can hold races, attract more people and keep them hooked, according to Rhys Thomas from Pump Track Wales.

And huge really is the right word to describe it — this is no dirt-scraped bowl. Instead it's a tarmacked, all-weather track, built by Olympic and UCI track builders Clark and Kent, covering some 400 square metres and able to accommodate 50 riders at one time. There are multiple line options, with eight different ways to ride around the

whole track, and that makes it endlessly repeatable and like no other, according to Rhys.

"On the opening day there were youngsters lapping for five hours with no break, barring a drink and a bite to eat," he says. "There seems to be enough variation to get people wanting to try different things and keep them coming back for more."

So it's big, it's unique and it's addictive, but it's the ambition Pump Track Wales represents that's even more impressive. Just 2,000 people live in Rhayader, but it wants to be the UK capital of mountain biking.

The early goal of the pump track was to provide somewhere safe for kids to ride their bikes, and stem the decline in riding participation, explains Clive Powell, who came up with the idea. "There were no kids cycling any more, and what I thought they really needed was somewhere to ride their bikes, close to the centre of town."



Pump Track Wales is making waves with riders from across the UK

WE WANT TO BE THE CAPITAL IN WALES FOR MOUNTAIN BIKING, BUT ALSO IN THE UK

This grew into the idea that Rhayader could become a home to cycling in the UK, and draw in riders from far and wide. “We want to attract people to the area,” Rhys Thomas says. “We want to be the capital in Wales for mountain biking, but also in the UK — we already have amazing natural riding, over 60km of it in the local area, and we’ve got Sustrans routes coming through here.”

Clive worked on the original concept and raised funds early on, but the pump

track soon grew bigger in size and ambition than he could handle on his own. It’s the strength of the community that’s really built Pump Track Wales then; four years ago Rhayader founded its own Sports Association bringing together all sports under one locally managed administration. This gave them the resources to focus on big projects, attract world renowned builders like Clark and Kent, and secure European funding for the project.

“A few years ago you wouldn’t see a bike among the kids here,” Rhys says. “Now they’re everywhere. The whole town is open to mountain bikers, and we want them to come, and they do — from Scotland, Birmingham, Southampton, all over. We have everyone, from the 60-year-old guys with e-bikes, to kids.”

The next stage for the pump track is to develop a competition series,

taking in the whole of Wales. But Pump Track Wales is really just the start for Rhayader, Rhys says. Next on the build schedule is a brand new man-made section of trail in the Elan Valley, which should be open in the new year. At just 1km in length, graded blue, and with an optional 0.5km red descent, it’s not going to set the world alight, but it’s a big deal for the Elan Valley where everything so far is natural.

“Up until now we’ve thought, ‘why make man-made trails when we’ve got 60km of singletrack already here’,” Rhys says. “There are so many routes that bring you back to the town, it’s just not necessary.”

Here at **mbr** we’ve long lauded the Elan Valley routes, which feature one of the best pieces of natural singletrack anywhere in the UK. But it’s by no means the only stretch of singletrack here,



according to Clive Powell, who's been riding and guiding for 35 years

"There are lots of interesting, technical trails, that are not too off-putting," he says. "It's certainly good for intermediates and beginners, because you can get a good ride in without finding anything too scary or dangerous."

The future for Rhayader looks bright then; we're not sure it's going to eclipse the likes of BikePark Wales or Glentress yet as the UK's premiere place to ride bikes, but it's definitely back on the map. For Rhys, the pump track is the cherry on the natural riding landscape, and for Clive it's a feature helping put kids on bikes again. For the rest of us, it looks like a great addition to one of our favourite natural trails, the Elan Valley loop — go to po.st/ElanValley and download our route.

Eight routes + multiple lines = all-day fun

All-weather surfaces are always good to go

Olympic track builders Clark and Kent have struck gold with their latest creation

HOT STUFF

WHAT WE'RE EXCITED ABOUT THIS MONTH

*MOST
WANTED*

ROCKRIDER G-EYE 500 FULL HD WIFI SPORT CAMERA £59.99

Last autumn GoPro launched the Hero8 Black. Capable of shooting in 4K at 60fps, and with the best image stabilisation out there, it's the hottest POV camera you can buy. It also costs nearly £400, which is a hefty chunk.

So, in steps the Rockrider G-Eye 500 Full HD WiFi Sport Camera, boasting some impressive

numbers... like 60. For £60 you get a camera that shoots in 1080p at 30 frames per second, with a 2in screen on the back, and you can even control it from your phone. It comes with a mount for your helmet and a waterproof housing too, but you will have to supply the memory card.

OK, so the Rockrider G-Eye 500 is never going to outperform the GoPro when it comes to any metric of performance, but if you're strapped for cash or a first-time movie maker, it does look like a great place to start your journey into HD movie making. decathlon.co.uk





DIGITAL DESIGN

Designed for sub-zero days, the Pearl Izumi Pro Softshell Lite glove uses Primaloft Gold on the back for insulation, and a DWR finish to repel water and keep out wind. There's conductive synthetic leather on the index finger and thumb too, for screen swipes. **£39.99, freewheel.co.uk**



INSIDE LINED

Winter's here so it's time to don an insulated jacket to keep you warm on the bike, or in the pub. Madison gives you two for the price of one with its Isolator Reversible Jacket; it's red on the inside, black outside, and has a cosy hood too. **£99.99, freewheel.co.uk**



SILENT RUNNING

The Stfu Bike Trail guide has been developed with the help of DH legend Chris Kovarik, and uses two rubber loops on your chainstay to stop chain slap. It'll fit 9-13 speed gears and a 50t cassette, it's simple, lightweight and claims to be silent. **\$29.95, stfubike.com**



CHRISTMAS CRACKER

Stop searching for the ultimate stocking filler, we have it right here for you, a subscription to **mbr**. Better yet, leave this page flopped open in front of your significant other, and perhaps they'll take the hint. Right now you get up to 36 per cent off too. **From £21.99, mbrsubs.co.uk/ANN9**



TWINKLE TOES

FiveTen has joined forces with Troy Lee Designs to create this Impact Pro special edition in lairy "strong red" colour. Naturally you still get the Stealth S1 full-dotty rubber sole, stiff uppers, solid mid sole, toe box and bumpers that make it the downhillers' favourite. **£139.95, adidas.co.uk**



HEAD STRONG

Endura has launched its new MT500 Full Face helmet. Made with energy-absorbing Koroyd, it promises high impact resistance and has a 644g claimed weight. It's DH certified, comes in two colours and three sizes, and has a 90-day refund or replacement guarantee. **£189.99, endurasport.com**



RACE RAPPORT

There's something great about physically turning pages, especially when it contains stunning photography. OK, enough trumpet blowing, Hurly Burly 4 is also good — a 200-page yearbook stuffed with glossy images from the DH WC and Worlds. **£17, misspentsummers.com**



LITE WEIGHT

Made from Ripstop Spandex, the 7iDP Sam Hill Lite Knee Pads are made for all day rides and maximum comfort. The foam pads mould to your knee's shape, and the whole ensemble stays put with a high thigh fit and silicone gripper strips. **£79.99, hotlines-uk.com**



SADDLE UP

Get your child into riding early with the Kids Ride Shotgun seat, it fixes to the top tube providing a padded saddle and grippy foot pegs, then there's an additional handlebar if the regular bar is too much of a stretch. **£120, kidsrideshotgun.com**

100% SPEEDCRAFT GLASSES, £199.99

Eyewear has a tough old job to do when you're a mountain biker. It has to protect you from mud and dust, but still allow enough ventilation through to be comfortable. It has to remain fog free, even when it's muggy and warm. And it has to deliver an unobstructed field of view in changing light conditions.

That last part is toughest of all, add in a tint to protect your eyes from glare and UV protection and you'll suffer when the trail dives into the woods or the sun disappears behind a cloud. You could use a clear tint, like pro downhillers or EWS racers, but who wants to squint into the sun on bluebird days?

The latest lens from 100% hopes to solve the problem with its photochromic lens, available in the Speedcraft glasses, which darken on exposure to UV light. The amount of light the lens lets through varies from just 16 per cent for bright mountain tops, right through to 77 per cent for dark woods and overcast days. The lenses are shatterproof, coated in something called Hydroilo to repel water and oil, and are interchangeable for night riding.

Does it work quickly enough to let you dive off a bright fireroad and into a dense evergreen forest? We'll let you know in the full review to follow. **freewheel.co.uk**



DO A CUTTIE

Tend to your trail this winter by hacking back some of the encroaching vegetation with the pack-friendly Gerber Gator Combo II Axe & Saw. The axe uses a lightweight nylon shaft and houses the coarse blade handsaw that's held in place magnetically. **£63.89, gerber-store.co.uk**



INSIDE JOB

The Stash Multi-Tool from Granite slips into your steerer tube, and boasts an 8-piece multitool including a Torx head, spoke key and valve core remover. Weighs 135g including assembly, and comes in two colours. **£54.99, granite-design.com**



CATCH OF THE DAY

Keep mud under control and help cleanse the seas with the Rideguard OceanX PF1 MTB mudguard — it's made entirely from recycled fishing nets (not old fishnets), and fits easily onto your fork with the supplied reusable zip-ties. **£14, kickstarter.com**

WINTER RIDES

Don't let winter put you off the big stuff; pack right, check the weather and head for the mountains, says Sim Mainey



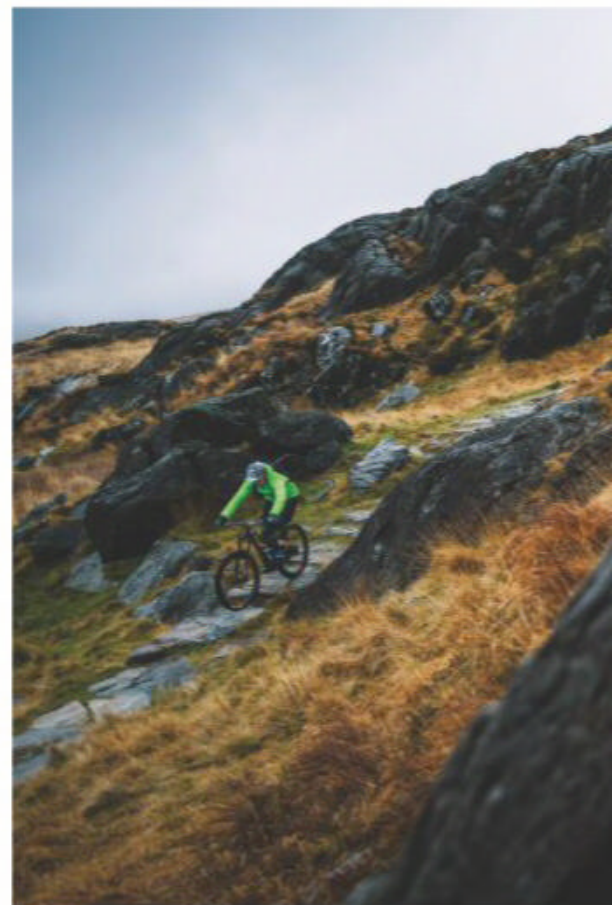
CALDERDALE 23.32km (14.49 miles)

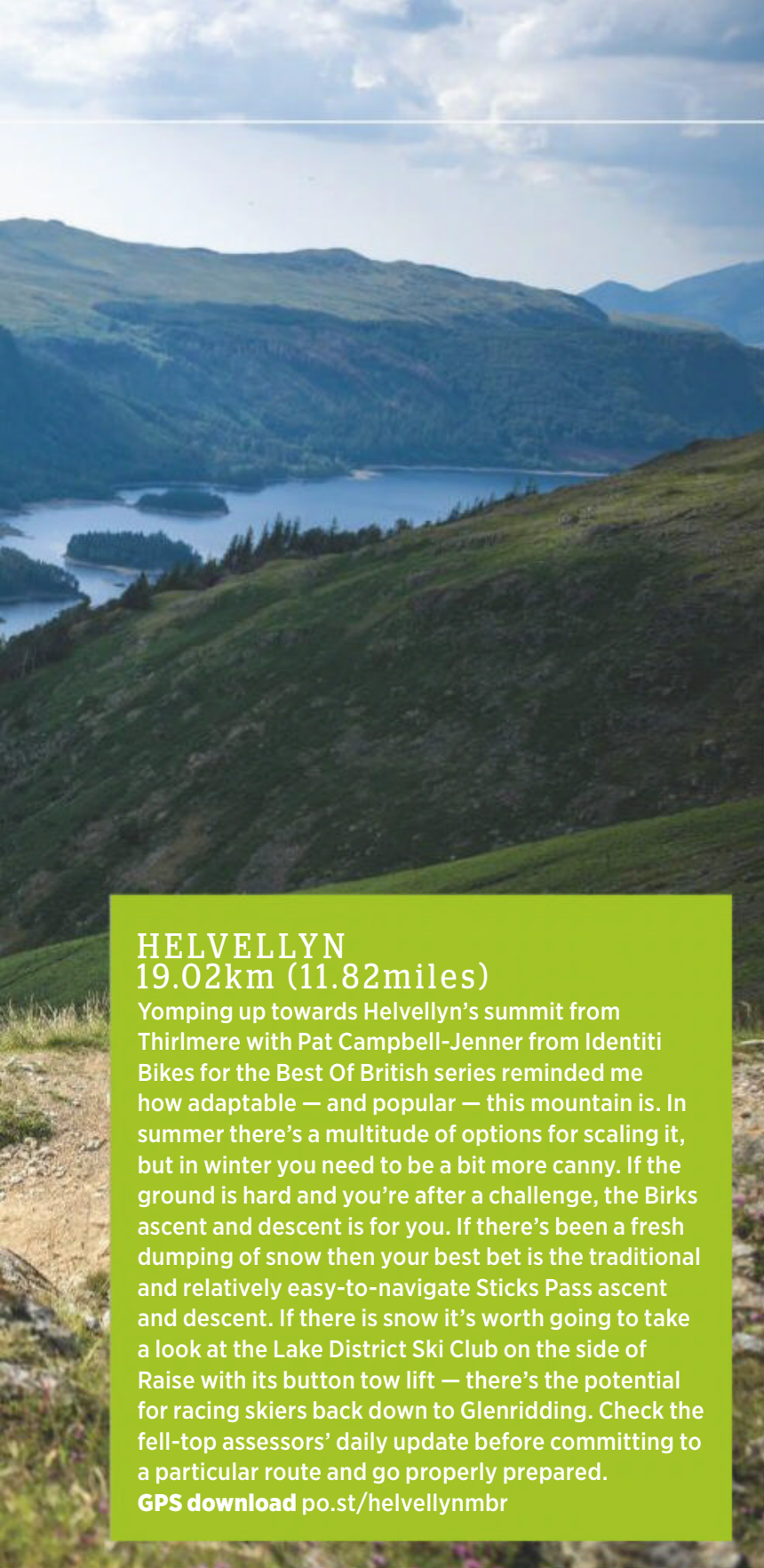
The South Pennine moors in winter can flip between a grey and featureless expanse and a glorious golden tundra depending on which day — or even hour — you catch them on.

While the moors themselves can be fragile in winter, as well as pretty sloppy, the gritstone rocks, boulders and escarpments and weather-proof pack-horse trails make them a good place for covering distance, but they are also a good place to practise your skills.

Winter at its worst can suck the motivation from your riding, so it helps to take time to refocus and look at keeping your skills sharp for when the weather improves. For the Trials to Trails feature, we set out on a typical Pennine loop, but stopped more often to practise clearing sections smoothly, putting the emphasis on improving our riding rather than just smashing out a route.

GPS download po.st/calderdale





HELVELLYN 19.02km (11.82miles)

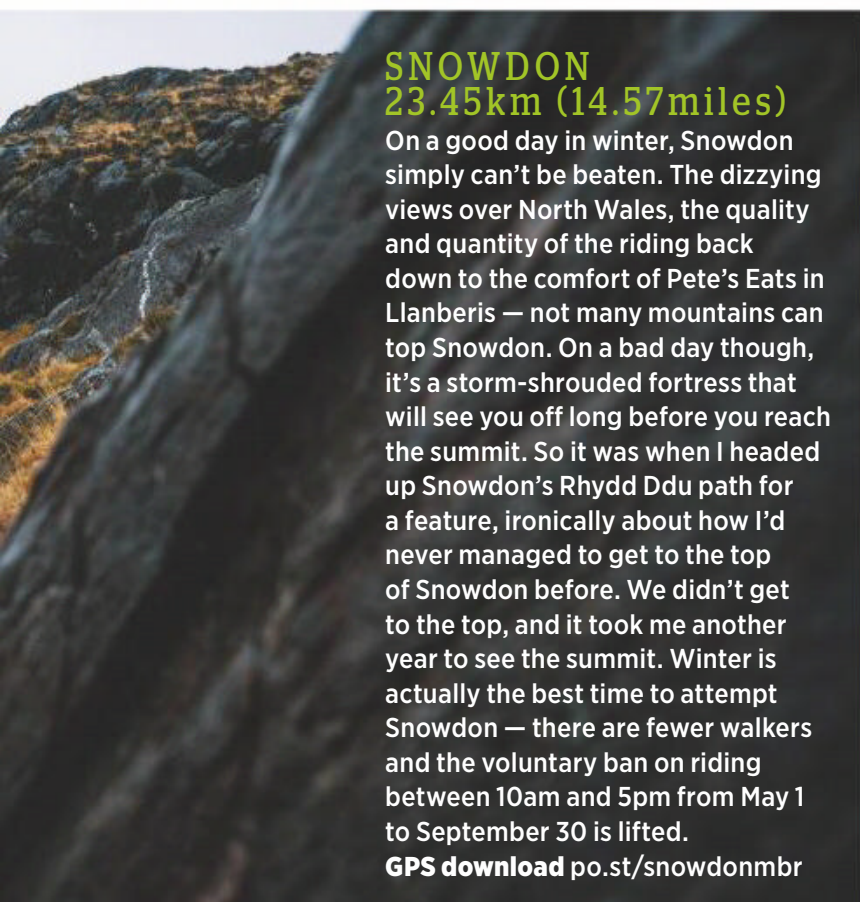
Yomping up towards Helvellyn's summit from Thirlmere with Pat Campbell-Jenner from Identiti Bikes for the Best Of British series reminded me how adaptable — and popular — this mountain is. In summer there's a multitude of options for scaling it, but in winter you need to be a bit more canny. If the ground is hard and you're after a challenge, the Birks ascent and descent is for you. If there's been a fresh dumping of snow then your best bet is the traditional and relatively easy-to-navigate Sticks Pass ascent and descent. If there is snow it's worth going to take a look at the Lake District Ski Club on the side of Raise with its button tow lift — there's the potential for racing skiers back down to Glenridding. Check the fell-top assessors' daily update before committing to a particular route and go properly prepared.

GPS download po.st/helvellynmbr

DUNNERDALE 29.61km (18.4 miles)

Walna Scar, but not Walna Scar. This is one of my favourite Lakeland loops and it was put together by a friend who'd scrawled out the route on the back of an envelope. Literally. I decided to see if this sketchy route had anything to it, took a gamble and came away grinning. It's not easy going in winter, with plenty of opportunities to get wet (it is the Lakes District after all), but it's a proper day out and has all the elements that make for a deeply satisfying mountain bike ride. The singletrack sections in particular feel almost too good to be true — tight, flowy and with none of the usual National Park traffic. Worth getting wet feet for, that's for sure.

GPS download po.st/dunnerdalembr



SNOWDON 23.45km (14.57miles)

On a good day in winter, Snowdon simply can't be beaten. The dizzying views over North Wales, the quality and quantity of the riding back down to the comfort of Pete's Eats in Llanberis — not many mountains can top Snowdon. On a bad day though, it's a storm-shrouded fortress that will see you off long before you reach the summit. So it was when I headed up Snowdon's Rhydd Ddu path for a feature, ironically about how I'd never managed to get to the top of Snowdon before. We didn't get to the top, and it took me another year to see the summit. Winter is actually the best time to attempt Snowdon — there are fewer walkers and the voluntary ban on riding between 10am and 5pm from May 1 to September 30 is lifted.

GPS download po.st/snowdonmbr

HIGH CUP NICK 17.83km (11.08 miles)

Summer is a great time to take on this classic loop, but unless it's approaching drought conditions things can still be a bit damp under tyre. This is because it sits on the watershed line. A raindrop landing on one side of this line ends up in the Irish Sea, while one landing on the other finds its way to the North Sea. In a deep freeze, however, you're almost guaranteed to keep your toes dry. Although they might get a little chilly. This is unapologetically a ride all about the view at the top of High Cup Gill. The scooped-out valley is a natural wonder and on a clear day the Lakeland fells look tantalisingly close. Crunching over peaty singletrack on the way up and getting all teary-eyed on the blast back down — this is a short but sweet ride.

GPS download po.st/highcupnick



BEST FOOT FORWARD

Switch up your stance to go faster, ride safer and feel better

Stand up on the pedals and which foot do you lead with? Chances are it's your right, according to our latest social media research, which shows 46 per cent of you do, compared with 40 per cent for their left. That's all very interesting, you're thinking, but why should I care, and what about the other 14 per cent? Well, it could have huge implications for the speed we ride at and our overall health.

Let's say you're in the majority and it's the right leg that points to the fun stuff. That means when you descend your hips are clocked to the left, your quads are working harder on your left than the right, and your hamstrings are being pulled more on the right leg than the left. Confused? Try it now, get into your preferred stance and feel the angle of your hips, and the different loads through your feet. And if you're still trying to figure out which leg you lead with, don't worry, we did that too and had to go for a ride to check.

HIPS DON'T LIE

The upshot is you ride in a twisted position, putting uneven load through your body. Try that for 40 years and you're an osteopath's worst nightmare (or maybe, dream money-spinning patient). There's also the little matter of cornering. Yes, we promised your foot stance would have big implications for your riding speed, and it's no lie — right footers tend to favour left-hand corners, and left footers enjoy railing right-handers best. That's because your



A dominant foot makes for an asymmetric rider so alternate the way you lead

stance is already doing the work for you on your best cornering direction, according to skills coach Andy Barlow, from Dirt School.

"As long as they're turning in their favoured direction as the difficulty or steepness of a turn increases, their hips will always feel like they're facing the correct way," Andy says. "This also works for wall-rides in BMX. Typically a lefty/regular/clockwise rider will prefer the wall to be on their left because they will feel more comfortable exiting the commitment of a wall-ride out into the space to the right."

SWITCH IT UP

Thankfully there's a simple solution:

switch it up and try riding with your wrong foot forward. The 14 per cent of respondents to our poll who said they swing both ways (feet-wise) are already doing the right thing. OK, to start with you'll feel less balanced, less confident and less able to control the bike, and you'll have to slow down a bit to deal with your self-imposed skill limiter. Over time though, you'll feel more comfortable as your body and mind learn the skills you already know from your dominant leg position.

Start small, try riding one trail per ride switch, perhaps the easiest one you know. If you ride with friends then drop yourself down the pecking order and follow someone usually slower than



To the left, to the right, check the new ride out... it's alright!



you; that way you'll still enjoy the now-challenging ride. If you're the slowest then keep in mind you probably won't be for long.

Don't be tempted to switch your stance for every corner you come across though, because it doesn't give you enough time to get set up for the turn, Andy Barlow says. "A much better way of lining up so you feel like you're always facing the correct way is to focus on keeping your body lined up with the bars. As you turn one way or the other your hips will allow the lead of your shoulders and upper body. This angulation of the hips will also work on off-cambers, or to influence a change of direction in a grip point."

4 REASONS TO SWITCH



1 MORE CONTROL

Sometimes you get into trouble on a trail because you've hit a techie section and your feet are the wrong way round. Instead of just holding on until you can get your feet sorted again, imagine being able to ride it out confidently and with just as much fun and control as you usually would. You'd be safer, too. On techie sections uphill, trials riders also get good at riding switch because they need to put in little pedal strokes from time to time.

2 BODY HEALTH

If you've been riding for any length of time you'll already have all sorts of imbalances from riding in your fixed stance. One leg will have a stronger quad, the other, stronger hamstrings and glutes. It doesn't stop there, though — your whole body will be canted in one direction.

3 OLD TRAILS LIKE NEW

Switching from your preferred stance is always going to remove some of your control and confidence. Try it on a trail you find easy though, and it'll become challenging again. Of course if you run into trouble you can always switch back to take the heat off.



4 LONG DESCENTS

With your trailing leg taking most of the load as you descend, it's naturally going to become more fatigued. That's fine on your normal trails you've trained your body for, but head to the Alps or somewhere bigger and your leg will quickly tire. Unless that is you switch up your feet. Even a few minutes riding switch can provide enough relief.



SKILLS
101

HOW TO SET YOUR BRAKE LEVERS

Tune in your reach to upgrade your control

One of the biggest mistakes I see from riders of all ages, skill levels and abilities, is poor bike set-up. The primary reason for this is because getting your bike set up correctly can be a complicated and lengthy process and most riders — and skills coaches for that matter — don't want to devote half of an hour's lesson to this. They just want to get on with the good stuff, like learning how to do a drop or corner. The owner's manual that comes with your bike is usually less than helpful too, it's just a health and safety leaflet with zero information in there about set-up. Over the next few months I'll be looking at the most common set-up issues riders experience.

Top of my list of set-up problems are brake levers, or more accurately, not being able to reach those levers. I see this all the time with the kids on our courses, where the levers are in the same position they were in when the bike came out of the factory. This usually means they're too far out, and if the rider wants to brake, they often have to reach forward, loosening their grip on the handlebars. This can lead to a loss of control, or worse, your hands bouncing off the handlebar.

The problem with brake levers (and components in general) is they're designed around average sizes (which for hands is a nine) and come pre-set in this average position. Fortunately, you can adjust the reach of the lever to match the size of your hand via a grub screw on the body of the lever. This adjuster can be tricky to access and is usually stiff, but with the right tools you can really dial in the reach so it matches your hand size.

TAKE THE LEVER TEST

To check if the brakes are too far out, I conduct a simple test. First, I get the rider to hook their thumb under the handlebar and then try and reach the hooked part of the lever just back from the tip — which is where you'll get optimum leverage — with their index finger. If they have to rotate their hand or wrist forward into a claw shape and decouple that thumb, the lever is too far out and needs to come in. My advice is to adjust the lever a few millimetres at a time, make a note of what you did,



and then ride a small loop activating the brakes as you do so. You can always bring the lever in or back out again if it's not right.

Then there's lever position — if you have to turn your wrist left or right to reach the lever, or your hand overlaps the end of the bar, then the lever is in the wrong position. You need to change its position on the bar. Loosen the fixing bolt and move the brake left or right until your index finger (or two fingers if you have to use them)

is exactly in-line with the lever's indent. Your palm should be fully engaged on the grip and your thumb hooked underneath.

Braking correctly is one of the core skills and I can't stress this enough — if you compromise on lever position you're compromising on safety and control. With your brakes in the right position you can moderate your speed, stay in control and stop safely, and that's something we should all get right, no matter our age.

PAUL BURWELL

PB works for The Trail Academy, a coaching, guiding and trail building company based in the Surrey Hills. For information on skills lessons, school clubs and guided rides contact: thetrailacademy.co.uk



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ENGRAVED ON MY HEART.

YOUNG TALENT

Nine-year-old Harry Schofield from Sussex is a two-wheeled prodigy; now YT has built him a custom Jeffsy

Nine-year-old Harry Schofield nearly lands a backflip. Not a 50ft gap at the Masters of Dirt in Austria this time, but a vertical bounce on a 'tramp' bike, in the garden of his parents' house in West Sussex. "That's the closest I've come to getting it," he says with a grin. Wheel-less, with the pointy bits wrapped up in foam and gaffer tape courtesy of his dad, this old BMX has been repurposed for use on a trampoline and now gets whipped, flipped and thrown with abandon.

It's far from the only bike Harry messes about on during our brief visit though. He rides trials on an old 20in balance bike, wheelies his new custom full-susser from YT, loops out on his brother's hardtail and lovingly pats the seat of his motocross bike. Full of energy, cheerful, and eager to ride everything on two wheels, Harry Schofield is as likeable as he is talented.

And boy is he prodigiously talented, riding balance bikes from the age of one, bunnyhops by two, before

taking up BMX, mountain biking and motocross. Last year he came third at the BMX World Championships, this year he went to Masters of Dirt in Austria. "I've always wanted to fly," Harry says when I ask what he likes about riding. "In other words, jumping."

Harry's dad Paul has a slightly different take on it. "He's fearless," Paul says. "I haven't pushed him into any of this, he just sees a jump and he wants to hit it."

"He breaks everything, though," Paul says, beaming with pride. "He's broken all my door handles. The towel rail, the car door hinges, his goggles just this weekend. He broke the cup holder in the van too."

"That was all by accident though," Harry pipes up.

Until now, Harry has ridden a succession of bikes handed down to him from older siblings, or pieced together from odd parts by his dad. But now YT has built a custom-designed full-suspension mountain bike to replace his trusty hardtail.

**"HE'S FEARLESS.
HE SEES A JUMP
AND HE WANTS
TO HIT IT"**

Harry demonstrates his ideal riding height



The new trophy cabinet will be arriving soon...



Harry's custom Jeffsy bets a big thumbs-up





When it comes to bike handling skills, Harry's got it dialled



HARRY'S CUSTOM YT

Harry's bike has been designed for him by YT engineer Harry Schröppe. It's based on the existing Jeffsy 27, albeit with customised geometry and kinematics, and some new parts to allow for the smaller size.

"It required new CAD drawings, moulds and also custom machine testing," Harry X says. "The Jeffsy 27 is a very playful bike and we thought it would be a good idea to include that DNA in Harry's bike."

That DNA includes Manitou suspension, a Shimano SLX 11-speed rear mech and SRAM crankset, and Maxxis Minion tyres for the 24in wheels. There's no price for the YT Custom, because it's not a production bike, and YT says they have no plans to make it so. We think that's a shame — after going to all the effort of designing the bike, they might as well sell it too.



Harry keeps Harry on point

NEW BIKES

First rides

SWINGING A LEG OVER WHAT'S HOT THIS MONTH



WHYTE E-150 RS

£5,250 / 27.5in / whyte.bike

NEED TO KNOW

- The E-150 is Whyte's first trail/enduro e-bike
- 6061 hydroformed alloy frame is designed around a Gen 4 Bosch Performance Line CX motor
- Down tube houses a 625Wh Bosch internal PowerTube with expandable capacity
- Travel is balanced at 150mm, and the bike rolls on 27.5in wheels shod with sturdy 2.5in tyres
- Entry-level E-150 S available for £4,740

The big-hitting British marque takes its first pedal-assisted foray into the enduro e-bike arena

Cloaked in secrecy and developed around the new Gen 4 Bosch motor, the E-150 RS combines everything Whyte knows about regular full-suspension bikes with the latest e-bike tech. With modern geometry, 150mm travel and 27.5in wheels, Whyte is billing the E-150 as a do-it-all trail/enduro e-bike.

But how did Whyte even develop an e-bike when production versions of the new Bosch motor were in such short supply? In the prototyping stages, Whyte actually rode a dummy motor and battery housing full of chains to represent the true weight of the bike, just to get the geometry and suspension dialled in. Once the production motor and battery became available, the pedal assistance was layered on top of a sound design. It's a somewhat unorthodox approach, but I'm convinced it's why the Whyte E-150 is such an accomplished design.

Why 27.5in wheels on a 150mm travel bike when the current trend is for 29ers? In a nutshell, they are stronger. Current e-bike riders will already know that the wheels, especially the rear, take a pounding, so stronger is better. Also, because e-bikes are more stable than their non-motorised cousins, Whyte didn't feel the need for the extra stability that 29in wheels typically offer.

There are additional benefits of the smaller wheels too. They offer the widest range of tyre choice, which led Whyte to settle on 2.5in tyres, because they are available in the biggest choice of casings and compounds — Whyte opting for a reinforced Double Down

casing Maxxis High Roller II on the rear for increased puncture protection.

The smaller wheels also make it easier for Whyte to offer a genuine XS frame size for the vertically challenged. In fact, there are five frame sizes to choose from and I had the opportunity to ride the size M and L back to back. At 5ft 11in I much preferred the fit and handling on the size L, probably because the 480mm reach is very similar to the non-pedal assist bikes that I currently ride.

It's the handling that really stood out though. Most of the e-bikes I've tested tend to have slightly over-damped shocks, so the bike rides flat and doesn't bob up and down when you're sat down pedalling over rolling terrain. This also makes the bike feel more stable for a given frame size, but it's a high price to pay if you're a more dynamic rider looking to work the bike through turns, pop off drops or switch lines in the blink of an eye looking for the perfect set-up.

On the Whyte E-150 I instantly felt that I could do everything I wanted to. And that's because Whyte has bucked

Oversized down tube
the only indication of
electrical assistance

Wide pivot stance
improves frame stiffness



the trend for increased damping with a lighter shock tune on the E-150. It makes perfect sense when you consider that the extra weight of the bike makes it inherently more stable, while the constant power from the motor smooths out even the choppiest pedal strokes.

HOW IT RIDES

The first thing you notice is how much more dynamic the E-150 is. At 24.77kg (54.6lb) it's no lighter than any other e-bike I've ridden, but because you can load the shock and use the suspension to un-weight the bike without getting bogged down in the damping, it's super easy to manoeuvre.

And that's why it's critical that you get the correct frame size. On an over-damped e-bike a smaller frame is actually easier to chuck around, but with the E-150 you want the correct size as it rides more like a regular bike. Which is great for anyone making the switch to a pedal assist e-bike.

In fact, my first ever experience on an e-bike was with the early Bosch motor and I'll never forget the initial surge of power that made me feel superhuman. Yes, the compact driver cog clogged with mud and the motor lacked the light touch need for tackling slippery, technical climbs, but I was hooked. With the new Gen 4 motor Bosch has addressed both of those issues. Thankfully, it has lost none of its grunt, so when you sprint hard, the bike is instantly up to speed. With additional torque sensors in the motor, it mediates that power much better on the climbs too, the motor responding almost instantly.

Apart from the oversized down tube that houses the 625Wh Bosch battery, the silhouette of the E-150 looks remarkably similar to Whyte's S-150 trail bike. Which is hardly surprising really, given that Whyte played a large part in pioneering the 1x drivetrain and symmetrical rear ends, two features that are common to most e-bikes.

To keep the weight of the battery centred in the frame and as low as



The E-150 RS
rides like a
regular trail rig

possible, Whyte has clocked the motor with the battery in front and parallel to it, rather than on top. It's why the frame protrudes more in front of the chainring than some other designs. It's also why I had some concerns about grounding it out, especially with the low BB height. My initial concerns proved unfounded though, as I've yet to hit the frame. And if I do, there's a protective cover in place to ensure that nothing gets damaged.

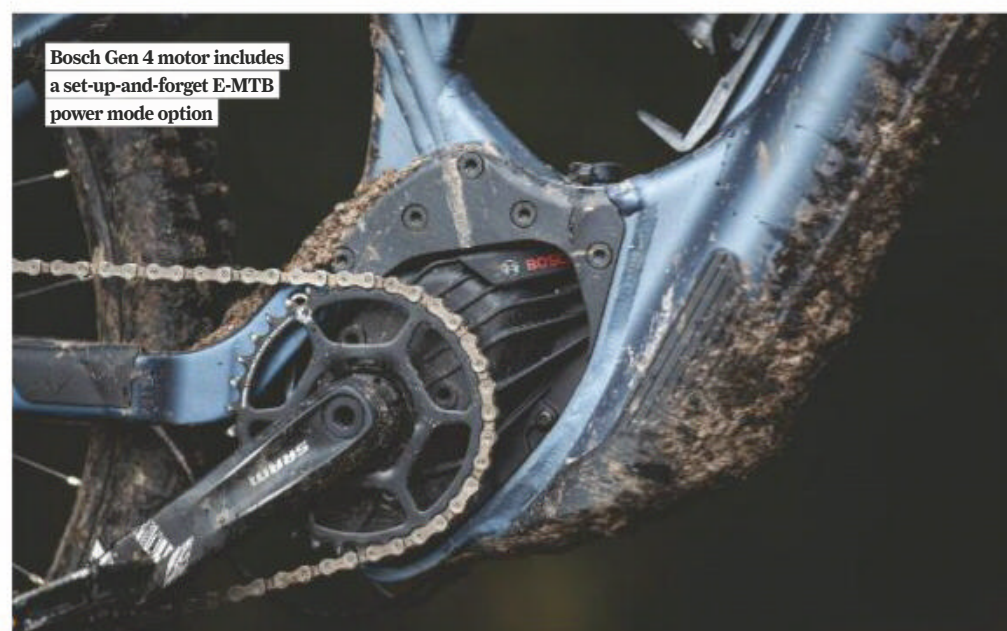
The bike ships with an internal battery offering 625Wh of juice, and the frame has been design to accept bigger batteries as and when they become available. Best of all, if you want to remove the battery from the frame to charge it, you can do so in just a few simple steps.

One carryover from previous Bosch systems is the compact bar-mounted Purion display. It's clear and easy to read, but when daylight is starting to

fade I found the display to be too bright and distracting. Fortunately you can adjust the backlight and tone-down the stock settings. The placement of the buttons used for toggling between the four power modes makes it tricky to use on rougher trails, so thankfully the E-MTB mode, that automatically adjusts the level of assistance, is a genuine set-and-forget feature. In fact, I only selected the power mode manually when the battery was running low and wanted to make sure that I had enough juice to make it back to the van.

So the E-150 RS feels a lot like a regular trail/enduro bike. Albeit one that lets you get twice as much riding done in the same amount of time. I loved the initial surge of power from the Bosch motor when you stand up to sprint, or when smuggling in a quick crank to keep the tempo high, but don't think for a second that it's because I'm lazy. If anything, the Bosch motor actively encouraged me to pedal harder, because I know the payoff on the Whyte E-150 RS is so high. And not simply because it's an e-bike. The Whyte E-150 RS is great bike, period.

Alan Muldoon



Bosch Gen 4 motor includes
a set-up-and-forget E-MTB
power mode option

mbr 1ST IMPRESSION

✓ HIGHS

Geometry and handling mirror a modern trail/enduro bike. The Bosch Gen 4 motor has power and control in equal measure. Durability is a key part of the design and specification.

✗ LOWS

The Bosch Purion display is distracting and fragile.



150mm rear travel comes courtesy of RockShox Deluxe



Neatly nestled but easily accessible charge port

The Bosch motor actively encouraged me to pedal harder because I know the payoff on the E-150 RS is so high

SPECIFICATION

Frame 6061 hydroformed aluminium, 150mm travel
Shock RockShox Deluxe Select+ RT
Fork RockShox Lyrik Select + RC, 150mm travel
Motor Bosch Performance Line CX Gen 4, 75 Nm max Torque
Battery Bosch 625Wh internal PowerTube
Display Bosch Purion
Wheels Sealed bearing boost hubs, WTB KOM Trail i30 rims, Maxxis Minion DHF/High Roller II DD 27.5x2.5in tyres
Drivetrain SRAM EX1, 34t chainset, SRAM X01 r-mech and single-click shifter, SRAM PG-1230, 11-50t cassette
Brakes SRAM Code R, 200mm
Components Whyte 6061 alloy 780mm bar, Whyte Enduro 35mm stem, Crank Bros High-Line 3 150mm dropper, Whyte Custom Triple Panel saddle
Sizes XS, S, M, L XL
Weight 24.77kg (54.6lb)

GEOMETRY

Size ridden L
Head angle 65.1°
Seat angle 70°
BB height 322mm
Chainstay 440mm
Front centre 812mm
Wheelbase 1,250mm
Down tube 743mm
Top tube 625mm
Reach 480mm





VOODOO BIZANGO CARBON

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NEED TO KNOW

- Carbon version of the award-winning **mbr** Hardtail of the Year
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- Fast-rolling Maxxis Ardent Race 29er tyres keep the tempo high

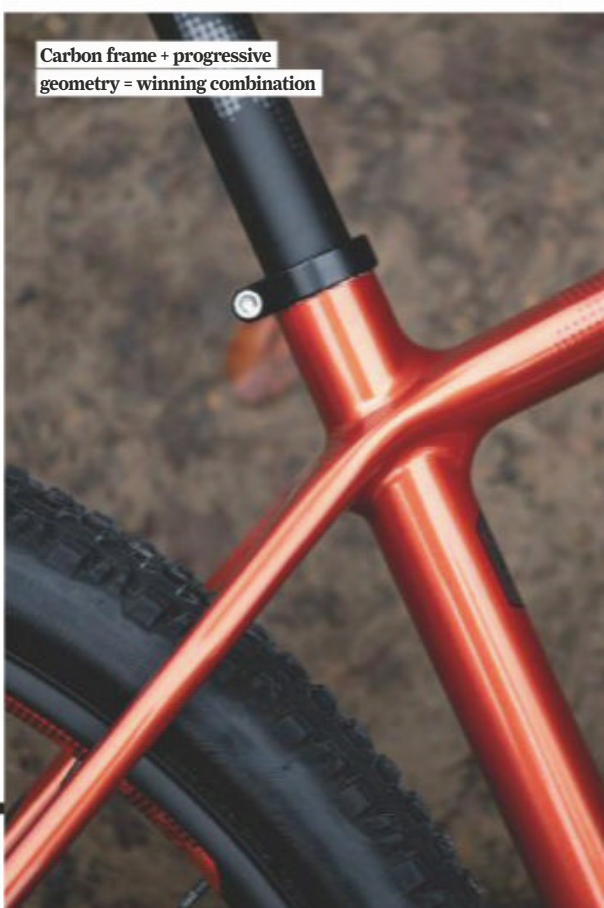
The acclaimed Bizango has a carbon stablemate but can Voodoo conjure up another classic?

Over the last three years the Voodoo Bizango has been the standout bike in the £750 category of our Hardtail of the Year test. It offers the best specification, the best value and, according to all of our testers, easily the best ride quality. For 2020 it welcomes a stablemate — the Bizango Carbon — and on paper this composite 29er looks every bit as good as the aluminium original.

But before we get into the nitty gritty, this bike isn't just a carbon copy of the alloy Bizango 29. Yes, Voodoo has retained the benefits of the bigger wheels but it has also made subtle changes to the geometry — it's

a touch longer and slacker than the alloy version, with a slightly steeper seat tube angle to help keep your weight over the front when climbing. All positive improvements then, and Voodoo was keen to point out that despite the material change and geometry updates, the Bizango Carbon still retains a trail focus.

One of the most noticeable features on the new frame are the 'dropped' chainstays. The main reason for the shape is that it allows Voodoo to increase tyre clearance, while keeping the rear end as short as possible. Lowering the stays also minimises noise and any possible frame damage from chain slap, which explains



Carbon frame + progressive geometry = winning combination



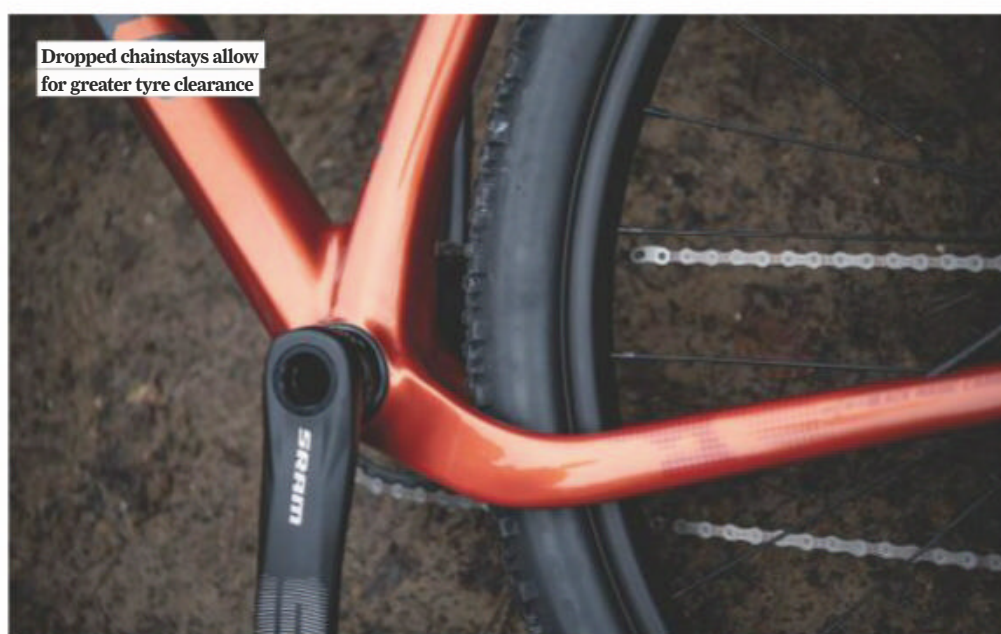
Voodoo's woven a spell-binding bike from the black stuff



In-house 50mm stem and 740mm bar



Boost axles stiffen the front and rear ends



Dropped chainstays allow for greater tyre clearance

For the price, the attention to detail is astounding

why there is no chainstay protector on this bike. We reckon the chain could still spank the stay from underneath though, but if there is any damage at least you're unlikely to notice it.

Like the alloy Bizango, the Carbon has an absolutely stellar build. With its slender 30mm upper legs, the RockShox Judy Silver fork is not the stiffest, but its 120mm travel is supple and silky smooth, so it really complements the frame in terms of ride quality and also visually. What's

even more impressive is that Voodoo managed to get a full SRAM SX Eagle 12-speed drivetrain fitted to a carbon bike, because you often see 10-speed at this price on bikes with alloy frames. It even has a user-friendly 32-tooth chainring rather than a standard 34t, so you'll be able to keep the revs high even on the steepest climbs.

The two-piston Shimano MT400 brakes are entry-level but don't let the price tag fool you, these brakes are powerful and consistently so, which is handy because the Maxxis Ardent Race tyres are some of the fastest-rolling rubber we've tested. Thankfully, the tyres also have a surprising amount of bite for such a shallow tread. If you're planning to use this bike over the winter months, however, we suggest swapping the tyres to something that will cut through the mud and find grip.

There's no dropper post on the Bizango Carbon but there's no QR seatpost clamp either, so putting the saddle down means you will need to get a multi-tool out, but then you will also need that for the bolt-thru axles on both wheels if you get a puncture or need to break the bike down to squeeze it into the back of your car.

HOW IT RIDES

For a £1,000 hardtail, the attention to detail on the Bizango Carbon frame is truly amazing. All of the tube profiles are orientated to increase chassis stiffness but at the same time the wafer-thin chainstays really help boost ride comfort. So while this bike is efficient, it also offers a smoother than expected ride. It's quiet too thanks to the dropped chainstay and the simple bolt-in plastic inserts



SPECIFICATION

Frame Black Magic carbon
Fork RockShox Judy Silver, 120mm travel
Wheels Alloy boost hubs, Voodoo 29er rims, Maxxis Ardent Race 29x2.25/2.2in tyres
Drivetrain SRAM SX 32t chainset, SX Eagle r-mech and 12-speed shifter
Brakes Shimano MT400, 180mm
Components Voodoo 740mm handlebar, Voodoo 50mm stem, Voodoo alloy seatpost and saddle
Sizes S, M, L, XL
Weight 12.8kg (28.22lb)

GEOMETRY

Size ridden L
Rider height 5ft 10in
Head angle 66.5°
Seat angle 70.5°
BB height 320mm
Chainstay 425mm
Front centre 760mm
Wheelbase 1,185mm
Down tube 735mm
Top tube 640mm

Voodoo's nailed the £750 category and the £1k carbon Bizango is a potential grandmaster



12-speed SRAM Eagle drivetrain is impressive for the price



that secure the internally routed cables, eliminate rattle but still make everything easily accessible.

The Bizango Carbon is 1.5kg lighter than the alloy bike so it's a boon on the climbs, and thanks to the steeper seat angle, I was still able to keep the front wheel down and pointing in the right direction even on the steepest uphill. The real advantage of the carbon frame, though, is that the bike springs to life when you hit the gas, and when you do hit the rough stuff, it's also way more forgiving. Factor in the improved sizing

It's 1.5kg lighter than the alloy bike, so it's a real boon on the climbs

and geometry, and Voodoo appears to have worked its magic once again.

Yes, the Voodoo Bizango Carbon is £300 more expensive than the original, but that extra cash gets you so much more bike for your money. In fact, if we put this bike up against the Vitus Sentier 27 VR, the winner in the £1,000 category in this year's Hardtail of the Year test, it'd definitely be vying for one of the top spots — it really is that good.

Paul Burwell

mbr 1ST IMPRESSION



HIGHS

Superb frame finish, stellar specification, amazing value for money.



LOWS

Lacks a chainstay protector and quick-release seat clamp.



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MONDRAKER CRAFTY CARBON RR

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NEED TO KNOW

- Brand new 29er Crafty Carbon e-bike with 150mm travel and a 160mm-travel fork
- Designed around the latest Bosch Gen 4 motor and integrated 625Wh Powertube battery
- Full carbon frame with e-bike optimised Zero Suspension system
- Flagship bike in a three-strong range is under 20kg, making it the lightest full-power e-bike currently available

Mondraker's e-bike is the lightest on the market but is it worth the hefty price tag?

Mondraker's all new Crafty Carbon e-bike range includes the lightest 'standard' full-suspension e-bike currently on the market. At under 20kg, the super-lightweight Crafty Carbon SL gets the latest Bosch CX motor and full capacity 625Wh battery, so you don't have to scrimp on speed or range. Impressive as that weight saving is though, the flagship bike costs the best part of 11 grand, making it one of the most expensive e-bikes too.

The design brief for the Crafty Carbon SL e-bike was about achieving ultimate performance, but Mondraker admits that this process has ramped prices up, and accepts that's not necessarily for everyone. Some of those costs are wrapped up in the proprietary Stealth Air carbon construction with its denser, higher-spec lay-up. The carbon stays and upper rocker save even more frame weight.

One rung down the ladder, and with a three grand saving, the Crafty RR ridden here is still super-light. In fact all three new Craftys share the same 150mm-travel carbon frame and 160mm-travel Fox 36 forks. All 2020 Mondraker e-bikes have updated frame shapes and layouts, with next-generation Zero Suspension sporting beefed-up links, hardware and revised kinematics that play nicely with the extra weight of an e-bike.

It's a seriously sleek frame design. The beautifully streamlined carbon chassis wraps tightly around an integrated Bosch 625Wh battery, and an alloy lower link that's now engineered to be three times larger than previously. The link rotates on an oversized 17mm collet-fastening axle to increase stiffness, which in turn reduces side loading on the shock for a more fluid suspension response.

Rather than piercing the seat tube at an angle, like on regular Mondraker full-suspension bikes, the e-bike Zero Suspension places the shock vertically in front of the seat tube. This shift brings a higher leverage rate and increases the progressivity of the suspension. There's also a reduction in chainstay growth throughout the travel, in part thanks to the flatter lower-link angle. Taken together, these changes aim to provide more support and increased rider stability; important on heavier, pedal-assisted bikes that are subjected to different forces and loads.

Obviously the new Crafty gets Mondraker's signature Forward Geometry. And while the stretched-out sizing was once radical, with so many brands following its lead, the 490mm reach on the size large doesn't seem so crazy. The 65° head angle is relatively commonplace too, but the Fox fork uses the shorter 44mm offset to balance the lengthy wheelbase and 455mm rear end.

Stealth Air carbon frame combines slick aesthetics with engineering finesse





Whatever the terrain,
there's no outsmarting
the Crafty

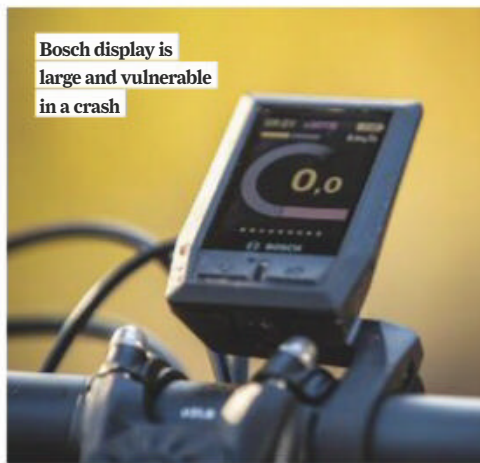


To power the new Crafty, Mondraker uses an integrated 625Wh Bosch Powertube battery. It's not designed to be removed trailside, as you first need to remove the motor before accessing the battery to slide it out. Mondraker realises this is a compromise that requires a power source in your bike storage, but it was essential to achieve the class-leading frame weights.

To stop the battery overheating and maximise performance, cooling ducts behind the head tube funnel air inside the down tube, while a huge 1.5in head tube with a custom headset cleanly guides all cables inside the frame. There are also bottle cage mounts under the top tube, so as not to compromise the structural integrity of the lightweight down tube.

HOW IT RIDES

E-bikes tend to squat more under power when the rider is sat down pedalling, but the new Mondraker Crafty Carbon RR bucks this trend with a very supportive response when you hit the gas. This latest Bosch motor is 25 per cent lighter, with way less internal drag; useful when



Bosch display is large and vulnerable in a crash



Control unit is redundant; E-MTB unit is all you need



Zero linkage configuration and Fox Float DPS Factory shock is a winning combination

The chassis felt solid without being too stiff, and pedalled exceptionally smoothly with minimal bob

it's continuously smooth and supportive while providing excellent feedback from the terrain. Sensitivity off the top is still plentiful, so it traces and swallows small bumps and roots invisibly and offers tons of grip when leant over too.

Up front, the 44mm offset Float 36 fork has 10mm more travel than the rear, and a FIT4 damper that's super supple, to the point where I wound on seven clicks of low-speed compression damping to find a better balance with the more supportive rear suspension. The Crafty steers sweetly with a good balance between straight-line smashing, manoeuvrability and precision.

One glitch was Mondraker's kooky carbon bar. With too little upsweep and too much backsweep, I couldn't get the hand position I wanted. Also, the fork steerer was cut too short, so the bar wasn't as high as I'd have liked, negatively affecting weight distribution on steeper tracks. Thankfully, all production bikes will ship with four headset spacers, so the stem/bar height is not a real issue.

In terms of sizing, the size large Crafty doesn't actually feel massive. The 350mm BB height isn't super-low, so my feet didn't feel that far away from the bar, despite the generous 490mm reach. If anything, the BB height probably makes the bike feel more dynamic, given the rangy 1,270mm wheelbase. The saddle is in the sweet spot for extended pedalling too, and the chainstay length feels perfectly

balanced at 455mm for both climbing and descending.

Overall, the Crafty RR performed brilliantly. The chassis felt solid without being too stiff, and pedalled exceptionally smoothly with minimal bob or interaction, even with maximum assistance. With all of the revisions to the Zero linkage, the rear suspension is really well rounded, gobbling up smaller hits and swallowing massive impacts with a smooth progressive feel that's hard to bottom out.

One area where the Crafty doesn't totally deliver is value. Plenty of e-bikes have similar motors and specifications for considerably less cash. For me, the main e-bike draws are assistance, extra range, all-weather climbing ability and sheer fun factor, so it's debatable how much extra cash Mondraker's weight-saving philosophy is worth, even if you'll get no complaints from me about the Crafty's sorted ride quality and superb suspension.

Mick Kirkman

mbr 1ST IMPRESSION



HIGHS

Lightweight with dialled rear suspension. Progressive geometry and sizing for an e-bike. Looks the business.



LOWS

It's a ton of cash. Can't remove the battery easily for charging.

SPECIFICATION

Frame Stealth Air carbon, 150mm travel

Shock Fox Float DPS Factory

Fork Fox 36 Float Factory FIT4 EVOL, 160mm travel

Motor Bosch Performance Line CX Gen 4, 75 Nm max Torque

Battery Bosch 625 Wh internal PowerTube

Display Bosch Kiox

Wheels DT Swiss HX1501 Spline One 29 30mm, Maxxis Minion DHF/ DHR II Maxx Terra 29x2.6in tyres

Drivetrain E13 TRS Race Carbon, 34t chainset, Shimano XT M8100 shifter and r-mech

Brakes Shimano XT M8120, 203mm

Components Onoff Krypton Carbon 780mm bar, Onoff FG 30mm stem, Onoff Pija 150mm dropper, Fizik Antares R7 saddle

Sizes S, M, L, XL

GEOMETRY

Size ridden L

Rider height 5ft 9in

Head angle 65.5°

Seat angle 73.5°

BB height 345mm

Chainstay 455mm

Front centre 815mm

Wheelbase 1,265mm

Down tube 725mm

Top tube 650mm

Reach 490mm

exceeding the 25kph assist limit as well as increasing the range and battery life. Bosch's intelligent E-MTB mode works seamlessly, and there's more top-end grunt in Turbo mode than most rivals for scrambling up steep climbs.

During development, Mondraker preferred the feel of the Fox Float DPS shock to the reservoir-touting DPX2, in part because the Zero linkage design requires a very light rebound tune, plus there's no ignoring that extra 140g weight saving.

On the launch I rode a mix of DH-style tracks and rough natural trails, the choice of shock proving just right, with the rear end feeling exceptionally well tuned both up and downhill. Sure, the Fox DPS shock is marketed more as a trail product than enduro, but I had no issues with heat management or the damping fading even on really long descents.

Whether riding loose rocks or big jumps, the 150mm-travel rear suspension on the Crafty takes it all in its stride. While not the plushiest compared to some e-enduro bikes, there's plenty of depth to the travel and



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★ STAR LETTER ★

MTB MISSIONARIES

I run a mountain bike club at Plymouth School of Creative Arts, which has been doing well. In the two years we've been running, around 50 students have actively engaged, with between 18 and 23 riders at any one time. In that time I have frequently been asked if we could take other kids, from outside the school, but due to insurance the answer has always been no.

I've now decided to look into setting up a not-for-profit Community Interest Company, which would exist solely to create opportunities for the young people of Plymouth, especially those from deprived backgrounds, to access the wealth of mountain biking around them. There are significant numbers of kids in the city who've never even left it, never mind on a mountain bike. We would aim to create

opportunities for these youngsters to develop habits for life, through an active and healthy lifestyle, both during the week and on weekends.

So far the idea has been universally well received, from the industry to local figures, but also seems to be a project unlike any other in this country. I believe this could be a ground-breaking initiative, if I can generate the support needed for such a venture. Are you aware of any projects in the UK, even vaguely similar to the idea I've outlined above?



Chris Jones

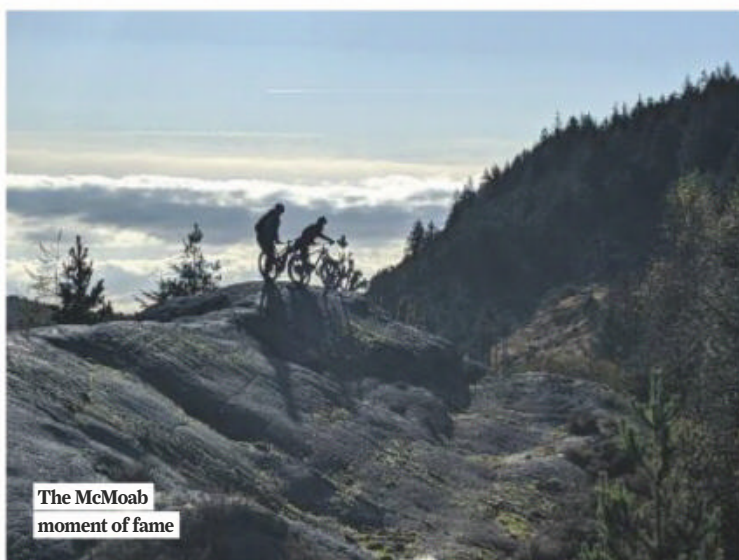
Ed – Chris, we salute you, this scheme sounds like an incredible thing for both the youngsters of Plymouth, and

mountain biking as a whole given the example it could set. And while we've seen a general trend towards community-led trail development and

ownership over the past decade, your project does indeed sound unique.

However, it might be worth contacting Borders College in Scotland, which runs its Borders Academy of Sporting Excellence (BASE) Mountain Biking Performance course if you're looking for some advice. It sounds like you have shared goals, as their interest is in offering life skills, as well as mountain biking performance. And if anyone out there knows of any other projects, please get in touch with us.

Best of luck.



ROCK STARS

I've been reading **mbr** for decades, and I like the 'National Geographic' style of some of the images. This weekend I was with a schoolmate and his 14-year-old son, introducing him to the 7Stanes. I always like to take lots of snaps when I'm out — one in a thousand comes out accidentally awesome. I guess you know McMoab at Kirroughtree? So here's a


great shot that maybe your readers will like and promote some more people to go ride these awesome places! Let me know if you decide to use them so I can tell the guys they became mtb rock stars for a day!

Ian Sutton

TOILET HUMOUR

Just finished the November issue, and yes I did nearly drop the magazine, with myself down the toilet, laughing. To suggest that people will spend their hard earned cash on a new bike and the top priority is to have water bottle compatibility, you are losing it.

I know I have written on this issue before, but you lot need to start taking the meds, and get a grip. THE main issue for just about everyone is budget, that's why there are so many direct sales brands selling bikes by the ton. Once the wife/husband, girlfriend/boyfriend or whatever has set the bar most people will set about looking for the best deal, either online, or some even may venture into a bike shop to try the bounce test.



YT Capra: no space for
bottle a deal-breaker?

Whichever route, it's all down to the price. I refuse to believe for a second that anyone who read September's excellent review on Enduro bikes [Direct Sales Enduro Bikes, September 2019] would pick the Vitus over the Canyon because there's room to fit a £5 bottle.

Yes, there are some people who will spend more on a particular brand, some will be afraid of buying online — not having a shop to take the broken bike to is a bit of a nightmare, especially if you are considering an electric bike. But even buying from a shop there's no guarantee of good service.

And as for this fashion fad for riding without a pack, over the years I have had to walk home a number of times from a ride with bits of bike dragging behind me, the walk of shame, mainly because of the lack of a spare part or tool to fix a problem. My backpack has also saved me from some nasty back injuries. If anything, over the years the pack has been getting bigger with spares, first aid kit, essential tools, and clothing, none of which I would like to see strapped to the frame, tied around my waist or stuffed into a tiny hole in the frame.

Keep on with the good work and making me laugh.

Rob

Ed - Hi Rob, thanks for writing in, we've always tried to inject some humour into the mag, glad it's working for you. And while we might have taken our meds, we can't actually remember! In all seriousness though, although both the Trek and Specialized share internal storage, that's not the whole story. Let's not forget that they are the key trail bikes from two of the biggest brands in the world, and if that doesn't make them relevant to a wide audience, I don't know what does.

On your wider point, we agree 100 per cent that one of the biggest factors in bike buying is cost. And this is why all of our bike tests are price pointed, and why we review bikes from as little as £375 upwards, from both direct-sales brands as well as those sold in dealers.



MOUNTAIN BIKE RIDER
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FEATURE



MOUNTAIN BIKE RIDER
mbr

TRAIL OF THE YEAR

The unsung, unseen heroes of mtb, our TOTY award celebrates those who toil year-round to give us new trails and fresh challenges

Words and photos: Sim Mainey

A well-sculpted length
of singletrack is a thing
of real beauty

If there's one thing we'd all like more of, it's time on the bike. Riding may be what's on our mind most of the day, but more often than not it has to fit around the general bric-a-brac of life. Time spent riding is valuable and however much you manage to get out and ride, here at **mbr** we want to make sure you get the most out of your time in the saddle. From buying guides and product reviews, to finding new places to ride, we're committed to improving your riding life. We're not the only ones though.

There are selfless individuals who have sacrificed their riding time to create places for us to ride. Whether it's scraping in a line and hauling rocks around, or the less glamorous job of attending meetings and filling in forms, we are incredibly lucky to have people who are helping to build new and exciting places for us to ride. These people, and the trails that they have worked so hard to create, deserve recognition and celebration. This is the driving force behind the **mbr** Trail Of The Year Award in association with SRAM.

Of course, with so many great new trails out there we needed your help in narrowing down which ones are most deserving of the award. And, as ever, we've split the award into two categories: Best Commercially Built Trail and Best Volunteer Built

Trail, and asked you to vote for the trails you thought were deserving of the title Trail Of The Year.

As well as bragging rights, both winners will receive custom **mbr** Trail Of The Year trail markers, while the winning volunteer trail group will also be awarded £2,000 to help fund future projects courtesy of SRAM. Alex Rafferty from SRAM sums it up:

"To have such a vast network of mountain bike trails and trail centres in the UK, we're incredibly fortunate. Trails that excite and inspire us to ride bikes, they're the motivation and stoke that inspire us get out there to learn, explore and develop our own skills.

"We're universally thankful and appreciative for the fantastic work and dedication of our fellow trail builders. And we're proud to partner with **mbr** to congratulate and reward those who have truly gone above and beyond in forever building the best mtb locations for us to enjoy together."

As ever with the Trail Of The Year awards the response for nominations was incredible. All kinds of trails from across the country were put forward, and after collating your suggestions seven finalists for each category emerged. We then asked you to vote for your favourites on mbr.co.uk, and when the polls closed we were left with two very worthy winners.

mbr
TRAIL OF
THE YEAR
WINNER

BEST VOLUNTEER-BUILT TRAIL

HAMSTERLEY TRAILBLAZERS - K-LINE



There's no shortage
of opportunity for
air on the red trail

IN ASSOCIATION WITH
SRAM



Hamsterley takes the
honours for our
volunteer-built trail

Hamsterley Forest feels quite remote. Tucked away on the east side of the North Pennines in County Durham, it sees far less traffic than other trail centres; Dalby Forest to the south and the 7 Stanes just over the border in Scotland drawing the big crowds.

Possibly overlooked, but most certainly not unloved, Hamsterley has been steadily growing its trail network as well as a community of riders and trail builders.

Hamsterley Trailblazers was set up in 2003 to try and help formalise some of the unofficial trails that had been built on Forestry Commission land by local riders. Today its remit has grown to cover much more than liaising with the FC. From applying for planning permission and building trails through to organising events and working to encourage new riders into the sport, Trailblazers is at the heart of riding in the area.

Trailblazers chairman Alex Talks is, as you'd expect, passionate about the work the group does. From the practical to the political, he's enthusiastic about improving riding in the forest and further afield — the group has just taken a nearby BMX club and track under its wing. The red route at Hamsterley is a case in point. This is a trail that has come about purely from the work Trailblazers has put in, it's a 14.5 mile testament to the solid graft and dedication of many people with a united cause — and it's still a work in progress.

Our **mbr** Trail Of The Year winner, K-Line, is just one section on Hamsterley's red trail. Named after Kay Graham who led the Trailblazers youth coaching programme and who sadly passed away in 2015, it has all the hallmarks of what makes for a TOTY winner. Fast, easy to session and packed ➡

HAMSTERLEY FOREST — K-LINE

K-Line is just one section of the 14.5-mile red trail. Filled with jumps it's the perfect section to work on getting some air under your tyres, but it's equally fun if you want to keep your wheels on the ground. Starting at the top of the hill on Polty's Last Blast and finishing with Nitrous at the bottom there are few trail centres that cram as much good stuff into one hill as this.

■ hamsterley-trailblazers.co.uk



with jumps of all sizes, it's a feel-good trail that rewards whatever you put into it. You don't need to be able to jump to enjoy it though, it's been designed to work at many levels, with a natural rhythm to the trail that anyone can appreciate.

K-Line has been an instant hit; it even has a race named after it, the K-Line TT. Last year 150 riders, 50 of whom were children, took part in a mini-downhill race on the trail. It's a trail that has widespread appeal and versatility.

It's not been easy going though. During construction K-Line changed direction three times thanks to ground conditions, making trail building nigh-on impossible. One section in particular was labelled the Bottomless Bog after several tons of rock and aggregate was poured into it with seemingly no effect on filling the muddy void. Needless to say the trail now bypasses it. Riders looking for a Strava shortcut, beware.

That K-Line is so popular is saying something.



The North Pennines plays host to Hamsterley's hinterland hang-out

TRAILBLAZERS RUN FAMILY DIG DAYS TO GIVE KIDS A SENSE OF OWNERSHIP

The trail leading into it, Polty's Last Blast, and the trail it joins up to, Transmission, are both stand-out sections in their own right. Deep within the tall, dense forest the views to the outlying moors are limited, but coming round one corner it opens up for a 'Hallelujah' moment and your eyes lift to the horizon, but are quickly dropped back to the line of doubles in quick succession.



Love and effort have yielded some of the best singletrack in Britain



Telltale signs of a productive day on the trails

Unlike the entrance to Polty's, there are no big signs to mark the start of K-Line. Alex says the club would love to have something to show where the trail begins, but realistically the money to create such a thing could be better used elsewhere. Knowing when and where to use resources is an important part of trail building, and with ambitions to create more trails elsewhere in the forest, tough decisions have to be made when it comes to budgets.

Trail building is part of the club culture here. There are dig days every third Saturday of the month and there are large banners on the trail to advertise the fact. Today a team of builders is helping to repair and resurface Transmission. General use and weather has taken its toll, and the trail needs a bit of love to help keep it flowing as intended. The volunteers work at engine specialists Cummins in nearby Darlington, which has a social responsibility programme. This allows them to use half a day a year of work time to volunteer on projects in the community. Alex is a lecturer and has had his students come along to lend a hand, and the Trailblazers run family dig days to help get kids involved and give them a sense of ownership over the trails. The dedication to digging is impressive.

While one group is barrowing in rocks, another is doing the mundane but essential job of ensuring the drainage channels are clear. These are the thankless tasks required to maintain a functioning trail, the chores that go unnoticed until someone doesn't do them. Trail building can't be all sculpting fresh turns...

It's no surprise K-Line has won the **mbr** Trail of the Year award; the sheer love and effort that has gone into its creation means it was always going to be a standout trail. 🇬🇧

FEATURE

mbr
TRAIL OF
THE YEAR
WINNER

BEST COMMERCIALY BUILT TRAIL

LEEDS URBAN BIKE PARK - RED TRAIL

Part of what keeps mountain biking exciting is the way it is constantly changing; evolving and innovating to incorporate new technology and the ever-shifting abilities and desires of riders. Leeds Urban Bike Park (LUBP) is arguably at the forefront of what many mountain bikers want and almost certainly what the sport needs.

Where Hamsterley Forest is slightly off the beaten track, Leeds Urban Bike Park is surrounded by a major city. Built on the site of an old golf club, it backs onto a West Yorkshire housing estate and the M1 and M62 are both within earshot. This might seem an odd place for a Trail Of The Year winner but it says much about how quality will always beat quantity, and how accessibility can be just as desirable as the out-there experience.

Turn up at LUBP on a weekend and the place is rammed. It's free to park and free to ride and with a BMX track, pumptrack, jump line and a blue and red mountain bike trail, it packs a lot of potential into a relatively small area. The range of riding on offer makes it popular with families of all abilities and backgrounds. It's a real melting pot of people that helps make mountain biking accessible and ➔

LEEDS URBAN BIKE PARK – RED TRAIL

The red trail at LUBP is not your usual trail centre loop, nor is it meant to be. This is a trail that focuses more on fun and improving skills than covering distance. This means you can do multiple laps and work on going faster, nailing the berms and turning rollers into jumps. Think of it as all the best bits of your favourite trail centre condensed into one rapid-fire run. Once you're done with the red trail you can try your hand on the pumptrack, BMX track, jump line or just head back to the hub for a top class coffee and bacon sandwich. Perfect.

■ leedsurbanbikepark.com

Urban legend:
Jeremy Hayes



Tailor-made
trails for your
delectation

a more realistic prospect for many. Carbon full-suspension mountain bikes rub up against rusting BMX wrecks, and it's fair to say equipment is not always commensurate with ability.

I arrive midweek and it's reasonably quiet, the usual collection of Transporter vans in the car park, school groups on the pumptrack and mums and kids in the cafe. Jeremy Hayes is the man behind Cyclepathway, the Community Interest Company that runs Leeds Urban Bike Park. He's a man whose enthusiasm for getting people riding shines through. A handy rider himself with a background in coaching world class BMX racers, Jeremy has enlisted the help of coach Jordan and two young locals, Oscar and Hamish, to show me around the trail.

It's clear they are all very familiar with the trail and know how to get the most out of it — being stylish on the bike helps too. The tone of the red trail is set from the start. Berms connect berms, lumps become jumps, and for such a mellow gradient there's plenty of speed on offer. Eyes quickly stream in the cold winter air — well they do for me, the fast lads have goggles on...

While Jeremy and the lads are happy to hit everything at speed, clearing doubles, jumping out of berms and generally dishing out style, other riders



Disclaimer: serious shredding is not obligatory



City slickers just got sicker: pumping the trail in earshot of the M62



Leafy Leeds: trails ride the same throughout the changing seasons



The bike park aims to promote mtb as a pastime for all walks of life




THE TRAIL RIDES JUST AS WELL IN THE WET AS IT DOES IN THE DRY



potter by equally happy. There's a refreshing lack of elitism here and much like the rest of the bike park all abilities are catered for. What are jumps to my four models are rollers for others, there's no real wrong way of riding the trail, just your way. Of course the idea is that over time confidence can be built up, the trail has been specifically designed to be ridden repeatedly and for each section of trail to be sessioned. Progression is a design feature. It's safe to say a day riding this trail over and over will bring your skills on in leaps and bounds.

The mould for the red trail was set by the pumptrack and BMX track. Jeremy was keen that anything they did wasn't going to be a 'council job' that held little appeal for experienced riders. This had to be a trail that allowed for personal development and pushed people's limits.

Jeremy points out that the trail rides just as well in the wet as the dry, a lot of effort is made keeping on top of potential puddles and clearing leaves from the trail and eliminating mulch. It's a small thing, but making a trail that is relatively clean helps encourage people to ride, especially in winter.

LUBP has a bigger mission than just providing a great place to ride though. By opening itself up to the community, Jeremy and the team aim 

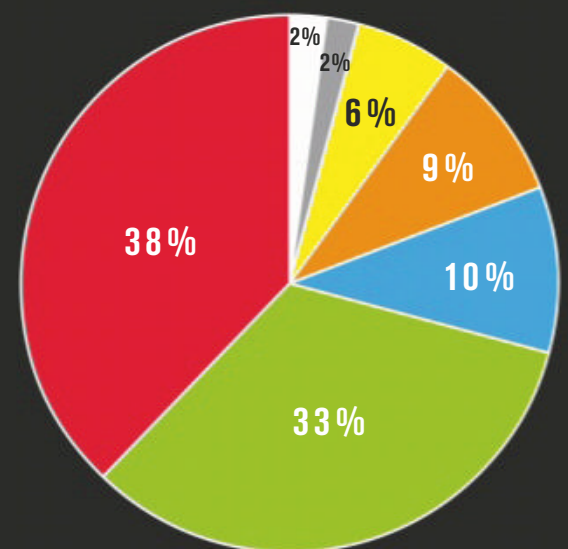
THE VOTING REVEALED

IN ASSOCIATION WITH **SRAM**

mbr at the polls — the readers have spoken

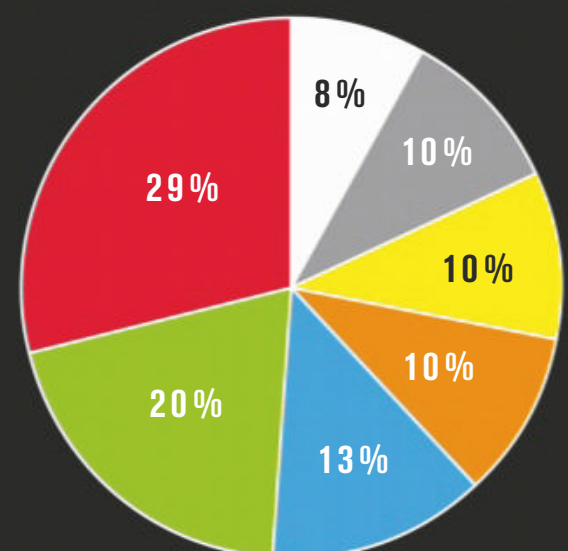
COMMERCIAL BUILT


- Leeds Urban Bike Park - Red Trail
- Revolution Bike Park - Vision Line
- BikePark Wales - Enter The Dragon
- Dyfi Bike Park
- Coed-y-Brenin - MinorTaur Blue Trail
- Dirt Factory Indoor Bike Park
- Nant yr Arian - Blue Trail



VOLUNTEER BUILT

- K-Line Trail (Hamsterley Trailblazers) - Hamsterley Forest
- Oakwell Hall (Ride Kirklees)
- Woburn Bike Park (Woburn Bike Trails) - Longslade Trail
- Forest Of Dean (Dean Trail Volunteers) - Verderers
- Cannock Chase (Chase Trails) - Follow The Dog
- Gisburn Forest (Gisburn Forest Trail Builders) - The Long Way Down
- Innerleithen (Tweed Valley Trails Association) - New York, New York





LUBP gives all **mbr** readers the chance to 'get out and ride'


to improve the lives and prospects of local young people. Programmes such as their Fit And Fed holiday club give kids — who might not otherwise get a decent meal that day — breakfast and then takes them riding, helping to instil life skills as well as giving them somewhere to go and something to eat.

As well as injecting a bit of the outdoors into Leeds, Jeremy is keen to get young people out of Leeds and into the outdoors. There are plans to get a minibus for outings to other trail centres and onto natural terrain so riders can see that the skills they have learned at the bike park work elsewhere.

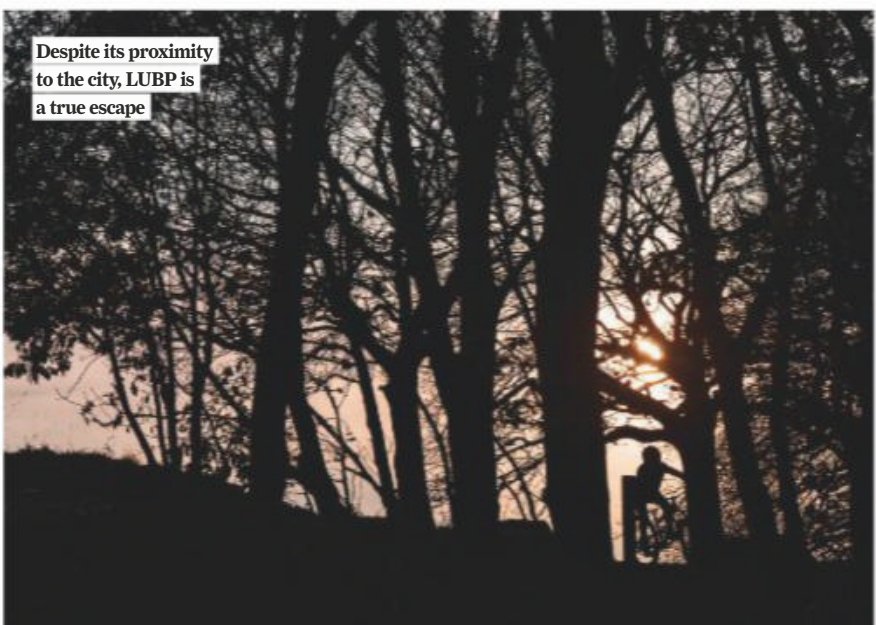
LUBP does what the best trail centres do; it caters for everyone whilst giving room for progression. That it does this and makes a difference to the lives of many people who might not otherwise have slung a leg over a bike is to be applauded and supported. Mountain biking may be our obsession but it can be an instrument for change. Hopefully Leeds Urban Bike Park is the first of many similar venues that helps make that change an option for more people.

Hamsterley and LUBP are each worthy winners of **mbr** Trail Of The Year awards. Each takes the concept of creating a trail that is fun to ride whatever your ability, but their locations couldn't be more different. Both, though, are much more than just good places to ride. These trails are being used to drive change and to grow the sport and develop new riders while at the same time keeping experienced riders coming back for more. It's not an easy task but when it works it works well, so it's no surprise that both K-Line and LUBP Red Trail have won over our readers.

Both trails also show that mountain biking and trail building in particular can be a catalyst for bigger and better things — bringing people together, giving a sense of purpose and rewarding efforts, both on and off the bike. Time on the bike is precious, but time spent building new places to ride is equally worthwhile. **mbr**



Leeds has been one jump above the rest according to our poll



Despite its proximity to the city, LUBP is a true escape

OWN THE NIGHT



SIX PACK Mk10
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HANDLEBAR MOUNTED



DIABLO Mk11
1750 LUMENS
HELMET MOUNTED

REFLEX++ TECHNOLOGY automatically boosts lights to our highest lumen outputs when riding hard and fast to then instinctively dim when going slow, the right lumens for right terrain and speed without the need to reach for a button whilst on the move, by using a combination of thermistors and the latest in 3D digital accelerometer and gyroscope technology.

TAP TECHNOLOGY, quickly switch between modes on helmet lights by tapping either the body of the light or the helmet without needing to locate the function button for fast control to match the pace of the trail.

 **EXPOSURE**
LIGHTS

MADE IN
GREAT BRITAIN





NATURAL PROGRESSION

Time invested in perfecting your position and braking at the right time reaps dividends when the terrain gets rowdy

Words: Andy Barlow Photos: Andy McCandlish

Riding technically difficult terrain can be one of the biggest thrills you get out of a modern trail bike. Being right on the edge of control but somehow pulling it off is always a rewarding balancing act to master. Some riders out there seem to be able to make it look easy, so why do so many of us struggle when it gets steep

and rough? And what are confident riders doing to make it look so easy?

This month we thought we'd continue the progression from our previous articles and give you some key points to focus on when riding more formidable hillsides. We'll look at the techniques the more advanced riders use to stay in control, and equip you with a new mindset to tackle more challenging terrain.

THE COACH

ANDY BARLOW

Before joining Dirt School Andy liked to win things — races like the Scottish XC Champs and the Scottish Downhill Champs. Since 2009, though, he's coached some of the world's best riders with Dirt School and helped bring on the BASE MTB course at Borders College in the Tweed Valley. But what Andy really likes to do is communicate those pro techniques to everyday riders.



Using your knees for balance means that your head and body weight will always remain neutral and composed.

RANGE OF MOTION

The worst thing you can do as a mountain biker is to keep your weight back. As soon as you retreat behind the saddle you have limited range of motion and will start getting tugged in whatever direction your bike goes. This is because your arms will be locked out and will try to pull you over the bars as soon as your front wheel slides on a root, or plunges down a drop. Instead of going back when it's steep, get low. It's OK to allow your hips to go behind the saddle when your bike dives at the front, but keep your head low and close to your bars and your elbows bent on the approach. That way when your bike dives — and it will — your head and body can remain neutral.

CHOPPY TERRAIN

Last month we looked at fluidity and safe braking zones to control your speed on the approach. If you're slowing down and staying low into choppy or rough ground, then you should be able to absorb the undulations by keeping flexible and letting your limbs absorb the impacts. Stay low and loose with your arms and allow your front end to track the ground without going stiff or panicking. If you're on flat pedals you should also drop your heels to really secure your feet to the pins. All of this range of motion and fluidity will mean that you can keep your body weight centred and decide for yourself where you can go heavy for grip, or stay light to float over roots or rocks.

THERE'S AN APP FOR THAT!

Dirt School's coaching app lets you see the right and wrong techniques in slow-mo

DIRTSCHOOL

LOOSE GROUND

When riding in loose, dry conditions always try and give yourself room to move. You'll never stop your bike from sliding away from you but what you can do is anticipate the potential movement and give the bike somewhere to go, so that when it does, you stay in control. Try and keep your head nice and low

and your legs apart so that when the slightest movement happens you can balance with your knees. Braking will play a big part as well, so look for safe patches of terrain and scrub the necessary speed as you pass. This will give you loads more control later on down the track when you need it more.

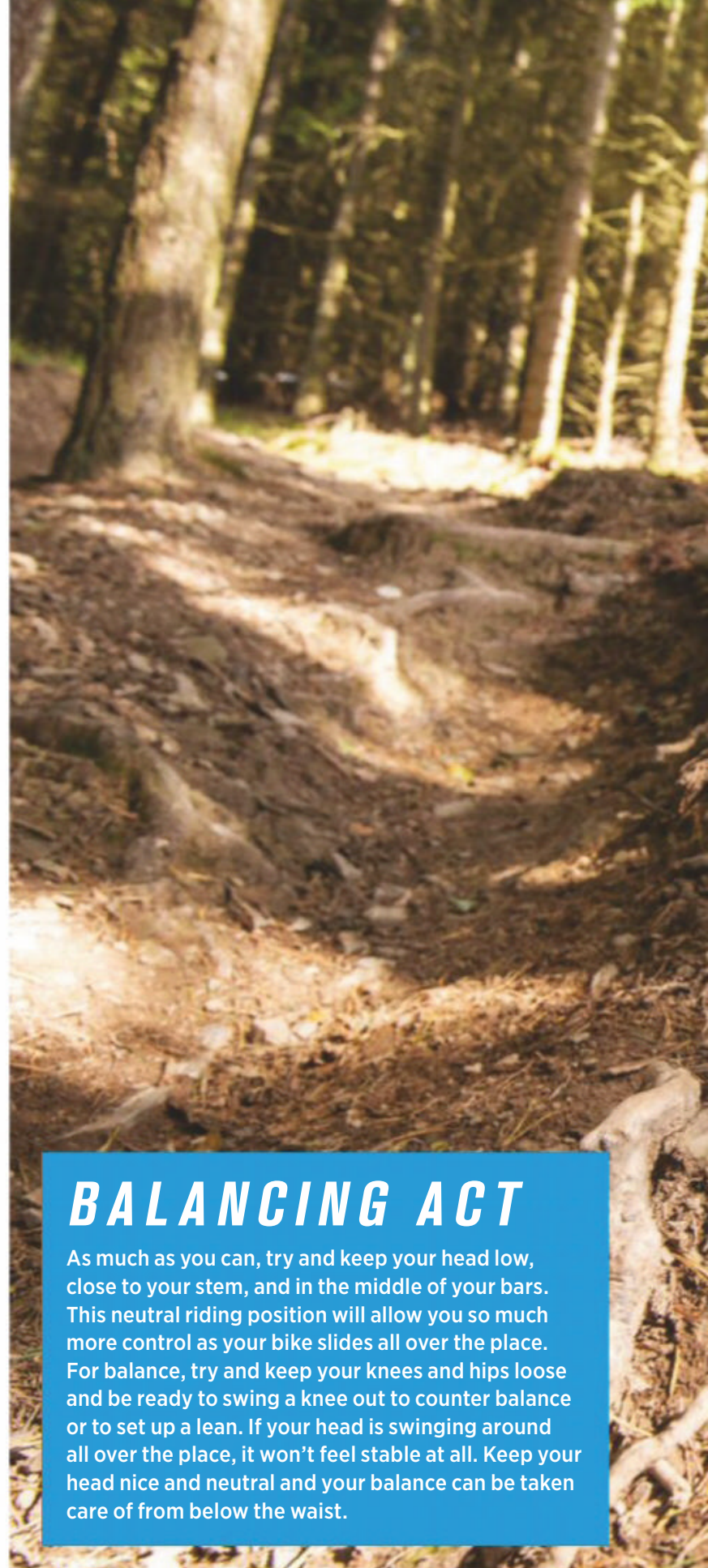


MUDDY TRAILS

One of the best pieces of advice that I ever got for riding in mud was to do it with speed. If you go too slow then the mud will push you around. Go a little faster and you can push a lot of the mud out of the way. If you have the right tyres on, and you brake in the right places, riding in mud can actually offer a lot more grip than you think. Try and aim for cambers and surfaces that you can trust, and always give yourself plenty of room to move.

GRIP POINTS

This is the best way of really changing the way that you think about technical trails. Anyone looking at a gnarly bit of track will see the obstacles. Slippery roots, loose rocks, exposure, tree stumps.. there's a lot going on. Look for the grip, however, and suddenly your perception of a trail will completely change. Instead of seeing all the hazards, you'll be deliberately looking for all the positive aspects of a trail, and relying on them to catch you from one section to the next. With a little practice you'll be spotting your grip points everywhere you go and completely forgetting about the features that used to distract you.



BALANCING ACT

As much as you can, try and keep your head low, close to your stem, and in the middle of your bars. This neutral riding position will allow you so much more control as your bike slides all over the place. For balance, try and keep your knees and hips loose and be ready to swing a knee out to counter balance or to set up a lean. If your head is swinging around all over the place, it won't feel stable at all. Keep your head nice and neutral and your balance can be taken care of from below the waist.



Slowing down on the way into a technical section will give you loads more control where you need it by staying loose and low.

SMOOTH RIDING

Whenever you ride technically demanding trails, your attention should shift to riding with control. Don't try and do it fast. Do it smooth. That way you're concentrating on all the things that will give you control instead of flailing around in the mud or clipping trees with your feet dragging on the ground. Stay smooth, look for the positive features on a trail, and you'll be riding with more confidence and control as a result.

You should have the same amount of control on a technical trail as you do on an easy one. Remember to focus on safe braking zones, a low body position, and looking for grip points, and you'll be in control and gaining confidence in no time.

LEARN A NEW LANGUAGE

With grip points in mind, listen to the way that different riders describe the same section of trail. One rider might say: "That horrible rooty section where you tripod down the off-camber." Another more experienced rider will say something more like: "The high line that avoids all the roots." Both riders are correct in how they see the trail, but one is thinking of how he or she might get through the section with confidence, while the other is already committed to losing control. This might sound too subtle to make a real difference, but the way that a rider describes a trail is the quickest way of telling what they are doing wrong when we run our coaching sessions at Dirt School. The language that you use to describe trails, or the words you use to describe the feeling of descending, is an insight into how you think about it. Talk positively and you'll ride positively. Start looking for grip points and you'll see grip and control everywhere you ride.



Staying low not only allows you to handle movement from the dirt. It also allows you to handle larger features on the trail.



Keeping your hips facing the same direction as your upper body will allow you to trust your grip because you'll create room for the bike to slide into or under you, rather than away from you.

Technical trails aren't always about going slow. Sometimes you can release the brakes and make good progress.

WIGGLE ROOM

Slightly different than range of motion this one — it's more about feeling like you have time to control a situation so when things don't go your way you have room to extend into. It should mean that you can allow yourself small moments where the bike and you are out of control, but recognise them as such and have the patience and maturity to go back to your plan of riding with control. Stay focused on your goal and you'll get through even the scariest of trails with control.

PERCEIVED EXERTION

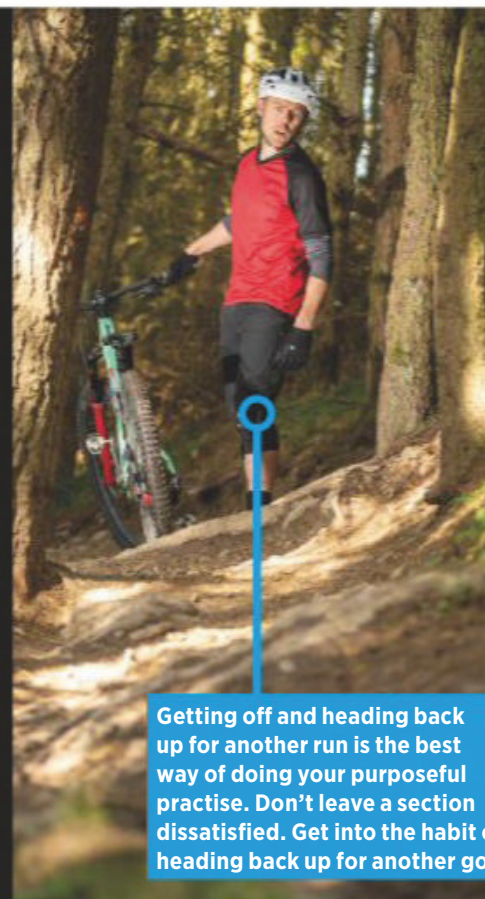
A fire-road climb, or open flowy piece of trail, might have you pedalling hard and feeling like you're making good progress. Once it gets steep, however, back off and focus on being smooth. Brake where it's safe, set up wide, and carry speed out of sections. This should feel like a deliberate change of your perceived exertion. In other words, it should feel slower and that you're in control.

FEEDBACK LOOP

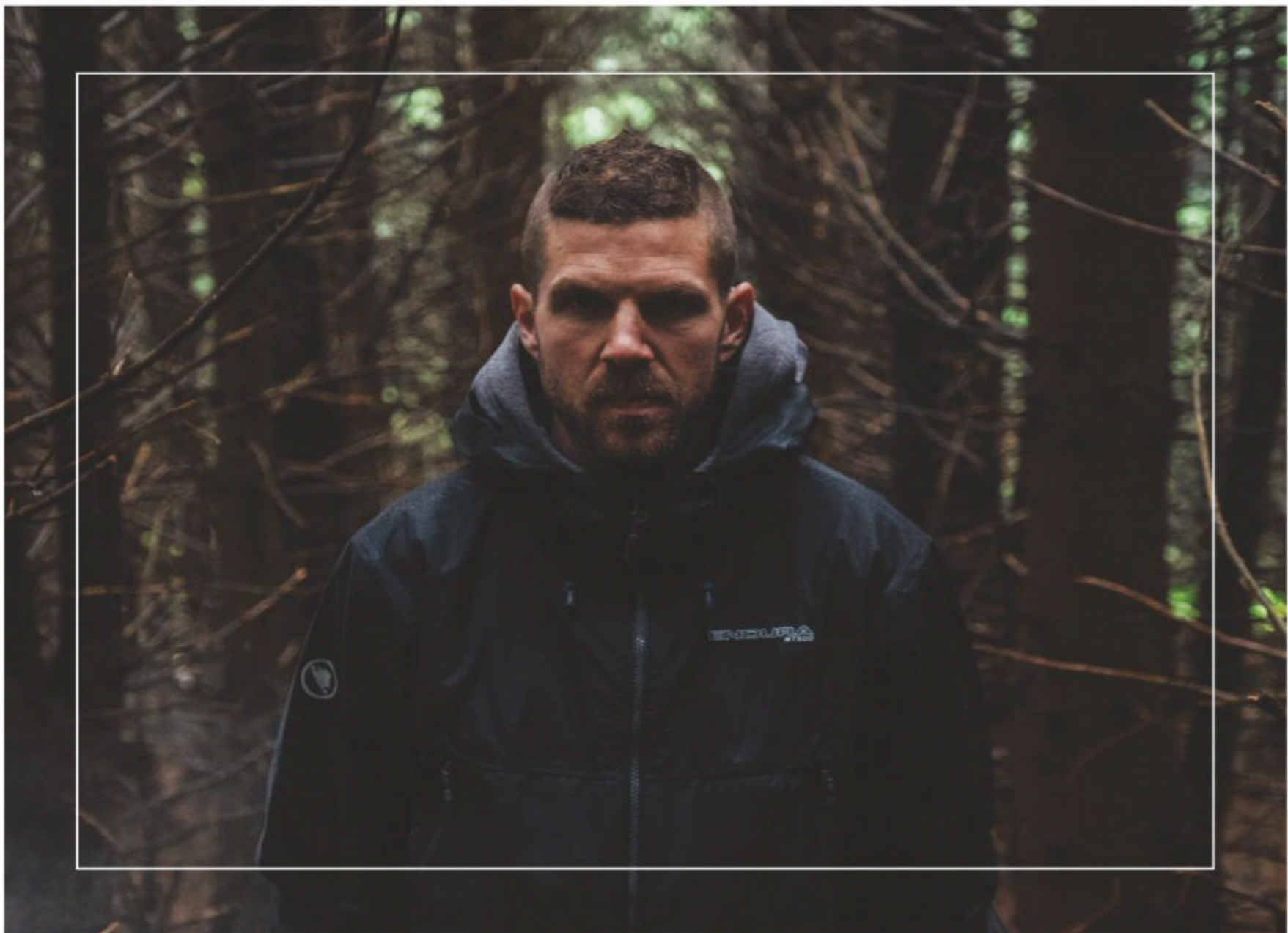
Having a coaching session is a great way of getting feedback on what you're doing right and wrong. An experienced coach will give you a list of specific techniques that you can go away and practise in your own time. Don't try and ride technical trails fast. Try and ride them neat and tidy. Your tyres will always slide on wet roots and damp mud. The trick is not to stop that, but to allow for it with a bigger range of motion and clearly identified braking zones. Be neat and tidy and the confidence will come.

PRACTISE, PRACTISE, PRACTISE

The best thing you can do for your riding is to allow time to do your purposeful practise. Doing two or three loops of a technical trail is way better than doing one big XC loop where you ride everything once. Make sure you have a goal and ride a trail with that goal in mind. It might be to spot your grip points, or to stay focused on your neutral riding position. Whatever it is, stay on target and try it more than once. Even finding a particularly difficult section of a trail and going back up for another go (or five) is better than riding through it unsatisfied and carrying on.



Getting off and heading back up for another run is the best way of doing your purposeful practise. Don't leave a section dissatisfied. Get into the habit of heading back up for another go.



Dan Atherton has been knocked down and out, but always got back in the ring again.

Anyone who has witnessed a World Cup downhill race will realise that it falls squarely into the category of dangerous sports which come with a risk of serious injury. There's zero run-off in wooded sections and there's no air-fence to cushion your fall should you take a tumble in a rock garden or misjudge a gap jump. Every competitor has to face the fact that there's a real risk of getting badly beaten up. You will crash. You will get hurt, there will be bruises, no matter how well protected you are.

Why did he go on after repeatedly hurting himself - and, in particular after breaking his neck?

It's a question that elicits a Dan Atherton trademark pause. "Hmmm. It's hard to say...it was just...passion really. It's passion that makes you get up at five or six in the morning to go training. It was just impossible to put the bike down. The thing is riding downhill is something that is so much a part of you, ingrained so deeply, that you can't stop."

The eldest of the three Atherton siblings is a reflective soul. You get the strong feeling that he is a steady presence in the Atherton Clan, but his exterior calm shouldn't be interpreted as a blissed out state, because riding downhill always meant facing up to a potential beating from an unyielding opponent.

He is still a formidable driving force behind the scenes of the race team but these days Atherton measures himself against his fearsome engineering in the Welsh hills rather than against the clock on the World Cup circuit. An undisputed track visionary and a king of trail construction, but the challenge is fundamentally the same, you are going head-to-head with a scary opponent, risking a battering from the terrain. He now pits his design wit as well as his skills, nerve and fitness against the mountain, and, although he's been knocked down a few times, he's not ready to stop riding or digging, not anytime soon.

Dan Atherton wears Endura's award winning MT500 collection.

RENEGADE PROGRESS



ENDURA

LONG TERMERS

Countless hours on the trails make this the ultimate test of performance as well as reliability

INTRODUCING

BEN'S NS SYNONYM TR 2

£4,199.99 / 29in / hotlines-uk.com



THE RIDER

BEN DAY

Position

Account director

Mostly rides Trails around Dorset

Height 6ft

Weight 80kg

THE BIKE

■ Aggressive “down-country” trail bike with a full carbon frame and 120mm travel

■ Rolls on 29in wheels to keep speed and efficiency high

■ First “XC” bike to come from NS with a focus on big days in the saddle

■ Available in four frame sizes and two price points

MONTH 1: Fresh from his tenure with the Mega, Ben swaps big hits for more zip

I first set eyes on the NS Synonym at Eurobike this summer, the bike standing out because as I’ve always associated NS with dirt jumpers and the more extreme end of mountain biking. Initially struck by the smooth, clean lines of the carbon frame, I got more drawn in by the intriguing geometry of the first hardcore XC bike from NS. Numbers that revealed a bang up-to-date 490mm reach on the size large. The head angle is progressively slack too at 66°. Sounds more like an enduro bike, right?

Upon closer inspection of the specification it’s clear that this bike is targeted at aggressive XC, or dare I say it, the ‘down-country’ category. Call it what you want, the Synonym TR 2 seems like the perfect antidote to the burly smash-fest that the Nukeproof Mega provided as my previous longterm.

I’ve had a couple of rides on the bike already and first impressions, although brief, are positive. The progressive geometry inspires confidence and even though the relatively narrow 760mm bar and rangy 60mm stem look somewhat retro, all seems good so far with the fit of the cockpit.

Granted, there’s more clutter on the handlebar than I am accustomed to, and after changing the grips to my favourite DMR Deathgrips, I have messed around with the positions of the controls quite a bit. There’s a left-hand overbar dropper remote for the X-Fusion Manic seatpost, which I have mounted as close to the grip as possible, making it easy to locate.

More confusing is the remote that simultaneously locks out the Fox fork and shock. I have pushed it inboard a little so I don’t knock it by accident when adjusting the saddle height, an added benefit being that it also forces me not to tamper with it, as I still can’t figure out when it’s open or closed simply by looking at it. As such, I have a little bounce on the saddle to check. I’m sure I’ll get the hang of it over time, but my first impression is that I will mostly keep it in the open setting, and keep the rear suspension fully active. It is, after all, only a 120mm-travel bike.

Much to my relief, the first rides on the NS revealed my initial thoughts on seeing the bike to be accurate. Get to the top of a steep descent and it doesn’t feel like a marathon race bike. Instead, you drop in fast and want to



Dressy graphics festoon the top tube

smash through roots and rocks full of confidence, then quickly realise the limitations of 120mm travel.

I also think the front end might be a tad too low for me. I have some spacer shuffling to do and the rise on the bar is minimal, so there’s plenty of room for adjustment as we become better acquainted.

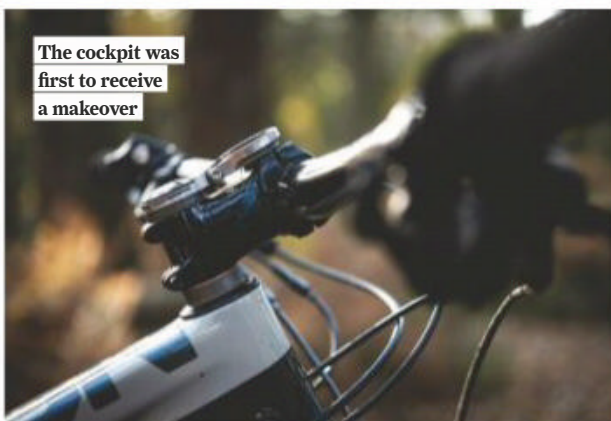
More pressing are the tyres. They came with tubes fitted so I need to convert them to tubeless, and while I have the 29in wheel out, I’ll probably swap the dry-weather Maxxis Rekon/Ikon combo for something a bit more aggressive, and better suited to winter conditions.

Tweaking aside, I can’t wait to get out of my depth on this bike. It’s certainly going to be loads of fun exploring the limits of a bike that has so much potential for epic rides and attacking rowdy trails. Hopefully the NS Synonym is the one bike that can truly claim to do both of these jobs well.

WHY IT’S HERE
The promise of XC pace with enduro attitude



120mm rear travel
has largely been
left open so far



The cockpit was
first to receive
a makeover



Fox 34 Step Cast uses
slimmer dropouts to
save weight



Progressive geometry
promotes a ballsy
woodland smash-fest

IN THE SHED



29in

Canyon Strive CF 8.0 £4,099



27.5in

Marin Mount Vision 8 £4,750



27.5in

Norco Sight C NX12 VLT £5,900



29in

NS Synonym TR2 £4,199.99

SPECIFICATION

Frame Superlite carbon, 120mm travel

Shock Fox Performance Elite Float DPS 2-pos remote

Fork Fox 34 Float Performance Grip, 120mm travel

Wheels Rotary hubs, WTB ST light 29in rims, Maxxis Rekon/Ikon 29x2.4/2.35in tyres

Drivetrain Truvativ Stylo 7K chainset 34t, SRAM GX Eagle shifter and r-mech

Brakes SRAM Level T, 180/160mm

Components NS Licence Mini Rise Lite 760mm bar, Synonym Trail 60mm stem, X-Fusion Manic 150mm post, Octane One Crit saddle

Sizes S, M, L, XL

Weight 12.7kg (28lb)

GEOMETRY

Size tested L

Head angle 66°

Seat angle 70°

BB height 345mm

Chainstay 435mm

Front centre 796mm

Wheelbase 1,229mm

Down tube 755mm

Top tube 610mm

Reach 491mm

JAMIE'S MARIN MOUNT VISION 8

£4,750 / 27.5in / marinbikes.com



THE RIDER

JAMIE DARLOW

Position Mag writer, vid maker, risk taker

Mostly rides

Surrey Hills and South Downs

Height 6ft 1in

Weight 78kg

THE BIKE

■ 27.5in trail bike with 2.6in tyres and blinging full-carbon frame

■ 150mm-travel R3ACT 2Play suspension from Nalid offers a unique perspective and look

■ RockShox Deluxe R shock and Pike RC Solo Air fork balance travel front and rear

■ Entry-level bike in a three-strong range, with the 9 and Pro models above it

MONTH 5: From workshop woe to singletrack glow

Last month I crashed, smashing my rear mech and bending the hanger in the process. A simple fix, I thought — a new GX derailleur from SRAM and a new hanger from Marin and the Mount Vision would be serviceable again. Simple things on bikes have a habit of becoming more complicated than originally thought though, and it's taken the best part of a month to get it all working again.

The trouble begins with the mech hanger — Marin uses a bespoke tool-free dial to secure it to the frame. Ingenious, but after six months' riding, the dial on my bike had seized solid, and no amount of the mighty panacea that is WD40 would shift it. Attacking it with a set of mole grips — and a screwdriver to stop the whole assembly turning uselessly in the frame — worked eventually, albeit with some collateral damage to the dial. Never mind, Marin supplied a new one under warranty and I managed to get the new mech on there without much more fuss. To stop it happening again I'm going to daub the threads with anti-seize just to be on the safe side.

This month I also got the chance to try an uprated Fox Float X2 shock from the top-end Mount Vision 9 in my bike. The results were spectacular — more on this in a minute — but fitting the shock proved almost as difficult as fitting the new rear mech. On most bikes you use an Allen key to tighten the bolts holding your shock hardware into the frame, but Marin has decided this is too easy. Instead, the Mount Vision requires not one but two sockets to remove the shock, working in conjunction with each other from either side of the bike. The recess for the socket is very shallow, so anyone with a shaky hand or less-than-great workshop skills is going to scrape up the splines of the recess something chronic. I chickened out at this point and took the bike over to Marin (Wiltshire,



Tool-free rear mech dial took a little persuading to play the game



The Float X2 is a game-changer on sloppy singletrack

WHY IT'S HERE
Has Marin made a trail bike with game-changing suspension?

not California) to get someone to do it. If you buy this bike, make friends with the bike shop you bought it from, then they can help out when it's time for your shock to come out.

In my experience a Float X2 shock can do wonders for any bike, and the Mount Vision is no exception. It lends the bike more compression damping, and it's brought some much needed control to the suspension on natural, rowdy trails where the terrain can surprise you at any moment. The ride feels smoother and more controlled, something I really want now the trails have turned all slippery slidey. I need a few more rides to figure out if the better shock really makes the upgrade to the Mount Vision 9 worth the extra money, so stay tuned for next month's report.

SPECIFICATION

Frame Carbon-fibre, 150mm travel

Shock RockShox Deluxe R

Fork RockShox Pike RC Solo Air, 150mm travel

Wheels Forged alloy hubs, Stan's No Tubes Sentry S1 rims, WTB Trail Boss Tri-Tech 27.5x2.6in tyres

Drivetrain SRAM Descendant 6K aluminium crankset, GX Eagle r-mech, NX Eagle shifter

Brakes Shimano XT four-piston, 203/180mm

Components Marin Mini-riser 780mm bar, Marin 3D forged stem, KS LEV Integra 150mm post, WTB Volt Race saddle

Sizes S, M, L, XL

Weight 14.69kg (32.38lb)

GEOMETRY

Size tested XL

Head angle 65.1°

Seat angle 64°

BB height 325mm

Chainstay 422mm

Front centre 818mm

Wheelbase 1,240mm

Down tube 750mm

Top tube 650mm

Reach 493mm

MOUNTAIN BIKE RIDER
mbr

MERCHANDISE



Just get out and ride in our exclusive range from **mbr**

Available in a range of colours and sizes.

Order now at shop.ukcyclingevents.co.uk/collections/mbr

PB'S NORCO SIGHT C NX12 VLT

£5,900 / 27.5in / evanscycles.com



THE RIDER

PAUL BURWELL

Position Freelance writer/tester

Mostly rides Surrey Massif

Height 5ft 10in

Weight 79kg (on a good day)

THE BIKE

■ Shimano STEPS equipped e-bike with 150mm of travel

■ 27.5in wheels shod with 2.6in Maxxis Minion 3C tyres

■ Has a whopping 630Wh lithium-ion battery hidden in the down tube

■ E-bike-specific SRAM NX groupset and ultra-short 165mm Shimano E8000 crank arms

MONTH 6: PB happens upon one eventuality that Norco didn't foresee

If you've ridden an e-bike you've probably noticed that when you stop pedalling, the motor gives you a tiny bit of extra assistance, for half a revolution or so. In fact, if you look down at the chainring when you stop pedalling, you'll often see it continue to rotate. This is called overrun, and it's built into the design of most popular motors because there are times, such as when you are picking your way up a steep technical climb, where you'll need to stop pedalling and get your feet level to pop over a step or obstacle in the trail. Overrun gives you a little boost so you don't stall and have to put a foot down.

So overrun can be really useful, but it's also a double-edged sword — especially when you get something caught in the chain or rear derailleur. On a normal trail bike, when this happens, you can feel this straight away and back off on the pedals. On an e-bike there's less sensitivity in the system (because you're not supplying all the power) and that extra half turn can cause problems. Big problems. Like on my Norco. I have dropped the chain a couple of times now and it's ended up wedged between the chainring and the frame, the overdrive burying it deep behind the chainring — the end result is that it's taken quite a chunk out of the frame, paint work

and carbon. To release a jammed chain in this type of situation you'd normally back pedal the bike but you can't do that on an e-bike. Nor can you fully remove the chainset — not on the trail anyway — because it's not connected to the crankarm and requires a special £40 Shimano removal tool. Not something you'd keep in your pack.

I also tend to pick up quite a lot of debris when trail riding on the Sight C, and a few times it's sounded like the rear derailleur has sheared off. Thankfully that hasn't happened, but these incidents are becoming more frequent as wear on the drivetrain has increased and the weather has worsened.

To stop chain loss, the easy fix would be to fit a chain device, but the Sight C doesn't have ISCG tabs or any mounting points. This is a bit of an oversight because it wouldn't add much to the cost of the bike, in fact it's so easy, Norco has added tabs and a device to the regular Sight trail bike.

So six months in and the Sight C has quite a bit of paint missing, the rear tyre is wearing down at a rate of knots, and the rear brake pads are not far behind. Fresh rubber and pads are on my shopping list, but no amount of touch-up paint is going to cover those gouges in the frame.

WHY IT'S HERE
Powered version of Norco's award-winning trail bike

SPECIFICATION

Frame Carbon, 150mm travel

Shock RockShox Deluxe RT

Fork RockShox Pike RC, 160mm travel

Motor Shimano E8000 STEPS

Battery In-tube Lithium Ion 630Wh

Wheels Novatec/DT Swiss H370 hubs, WTB ST i29 rims, Maxxis Minion DHF/DHR II 27.5x2.6in tyres

Drivetrain Shimano E8000 chainset 32t, SRAM NX r-mech and shifter

Brakes SRAM Guide T, 200mm

Components Norco 800mm bar, Forged 50mm stem, TranzX YSP12JL Stealth 150mm dropper post, WTB Volt Sport saddle

Sizes S, M, L

Weight 22.75kg (50.16lb)

GEOMETRY

Size tested L

Head angle 66.2°

Seat angle 69.5°

BB height 333mm

Chainstay 445mm

Front centre 795mm

Wheelbase 1,240mm

Down tube 740mm

Top tube 600mm

Reach 470mm

Freeing a jammed chain requires crank removal



Rearward rubber is starting to blubber



BEN'S CANYON STRIVE CF 8.0

£4,099 / 29in / canyon.com



THE RIDER

BEN SMITH
Position Art editor
Mostly rides Surrey Hills
Height 5ft 9in
Weight 77kg

THE BIKE

- 29er enduro race bike with up to 150mm rear travel
- Shapeshifter switches between XC and DH modes on the fly
- High-end Fox Performance Elite suspension front and rear
- Carbon Reynolds wheels and SRAM X01 groupset complete dream-build specification

MONTH 3: Straight in at the deep end, is Ben's Strive hard enough for the Ard Moors Enduro?

First and foremost, Canyon conceived the Strive as an enduro race bike. It's fitting then that our first major outing was the Ard Moors Enduro back in September. The course had a bit of everything, from fast, flowy hand-cut tracks through steep, techy moorland trails to teeth-chattering rocky chunder and jumps aplenty.

With the opportunity to only practise a few of the stages before the clock started, it was mostly raced blind too — a true test of everything an enduro bike should be able to handle. So how did the Strive fare?

By the time the race rolled around I'd had the Strive for a couple of weeks, so plenty of time to dial in the suspension and get a feel for how the bike rode. The Fox 36 fork has a handy pressure guide on the lower legs so it's easy to get a ball-park set-up and the rear suspension wasn't much trickier to adjust either.

Sure, my first ride in the Surrey Hills saw a little bit of tweaking to the rebound damping, but despite that I still ended up adding another 5psi in the fork

WHY IT'S HERE
Does the Shapeshifter really offer two bikes in one?

and 10psi in the shock after Ard Moors' practise, as I found myself hitting stuff faster and harder in a race situation. Even with the firmer set-up, the bike felt very balanced and neutral at speed. The Reynolds carbon wheels are solid and responsive, the SRAM brakes and gears positive and consistent.

In fact, everything seemed to gel perfectly, which allowed me to concentrate on hitting my lines and trying not to crash. On the pedally sections I put the Shapeshifter to the test, and the bike definitely felt a little more taut and upright when stomping on the pedals. The revised ergonomics of the lever making it easier to use when your legs are diverting oxygen away from your brain.

And that's exactly how a good race bike should be. You don't think about it when riding on the limit, so you're not having to compensate for issues that could cost you time. I managed clean runs on every stage of Ard Moors, didn't crash and bagged a placing that I was super-happy with. So the Strive passed this test with flying colours.



SPECIFICATION

Frame Strive CF carbon, 135-150mm travel
Shock Fox Float DPX2 Performance Elite
Fork Fox 36 Performance Elite, 160mm travel
Wheels Reynolds TR 309 carbon, Maxxis DHR II 29x2.4in tyres
Drivetrain SRAM Descendant carbon crankset 32t, X01 r-mech and shifter
Brakes SRAM Code R, 200/180mm
Components Canyon G5 800mm carbon bar, Canyon G5 40mm stem, Fox Transfer Performance Elite 150 mm post, SDG Radar saddle
Sizes S, M, L, XL
Weight 14.5kg (32lb)

GEOMETRY

(DH MODE)
Size tested L
Head angle 65.3°
Seat angle 65.9°
BB height 334mm
Chainstay 437mm
Front centre 792mm
Wheelbase 1,229mm
Down tube 745mm
Top tube 640mm
Reach 470mm

Tested

SUNTOUR DUROLUX R2C2 FORK

£639.99

SPECIFICATION Weight: 2,210g (190mm steerer) • Offset: 44 or 51mm • Travel: 170-140mm (internally adjustable) • moorelarge.co.uk

Packed with features at a good price, the Durolux R2C2 is Suntour's top-tier enduro fork. A hollow-forged aluminium crown holds 36mm legs and an integrated (removable) fender, and its black magnesium lowers have good mud clearance even for properly meaty tyres. R2C2 refers to the damper being four-way adjustable, including the rare opportunity to independently tune high-speed rebound.

Travel can be altered internally from 170mm (tested) down to 140mm by clipping plastic spacers above the negative spring; easily done after removing the lower legs. The Durolux chassis is one of the stiffest around too, which helps explain the 200g or so extra over enduro equivalents.

Suntour has worked hard to refine performance with its top-level sponsored riders, and, while the latest fork looks similar, it's significantly different inside, so have the brand's tweaks paid off?

For a start, throughout testing (including racing the multi-day Trophy of Nations in Finale, Italy) the Durolux never missed a beat and remained consistent on the longest, roughest descents. The external adjustment range is good and, unlike previously, adding extra high-speed compression (tuneable across a five click range) for more bump control doesn't make it too harsh or spiky. The negative/positive air spring set-up balances rider weight well too, so there's no excessive fettling with spacers to dial in ride height and support.

Damping range is broad (I ran high-speed rebound fully open) and

more towards the 'controlled' bias, like Öhlins or X-Fusion, than the lighter touch of a high-end RockShox. It's a little noisy and squelchy on the rebound side, but still slides smoothly throughout the stroke with minimal harshness. Riding hard and fast on hard-baked terrain, there's solid control and support, and the Durolux works well even when not totally dialled in to your weight and riding style (highlighted when swapping between test riders).

The fork's solidity is excellent, but you can feel the extra bulk slightly over lighter equivalents, and the fiddly Q-Loc II axle gets grouchy when crud gets in the expanding wedge — to the point I struggled to remove it through the hub multiple times, which gets annoying pretty quickly.

Testing in the UK on wet, slimy dirt and damp roots, the off-the-top sensitivity (to aid tracking, grip and assurance) isn't quite at the level of the top-tier RockShox or Fox units, so on slick, slow-speed, technical steepers, the Durolux doesn't trace the ground as closely. Even with the damping run wide open (in tandem with an air spring that feels quite progressive) it skips a few hits in really rough stutter bumps and whoops where the best forks keep tracking, which also subtly reduces stability and increases hand and arm fatigue.

In fairness though, this is a subtle difference in performance and fairly critical when you're comparing it to products costing over £400 more, so it's impressive how much Suntour has

improved the latest iteration of this fork.

Overall, the Durolux is composed, easy to get set up, and also very reliable. Being a shade less sensitive than the best forks is offset by the Durolux chassis being extra solid and stiff, and its muscular damping feel will really suit hard-charging, heavier riders; especially those on a budget considering it offers such a huge savings.

Mick Kirkman



YOUR TESTERS



DANNY MILNER

Thoroughly enjoyed himself testing two American dream machines from Santa Cruz and Intense, fuelled on a diet of rollmops and schnapps



JAMIE DARLOW

Been towing his vast ingratitude of kids with the e-bike, after getting a bolt-through axle adapter for the bike buggy. It's still mountain biking, right?



PAUL BURWELL

PB's been hiding his hoary head inside waterproof hoods this month, testing half a dozen waterproof pants and jackets to keep the chill out



BEN SMITH

Bought a modified car with boom box and loud exhaust, spent the month leafing through old issues of *Max Power* and dreaming of Jakki Degg



CUSHCORE PRO TYRE INSERT

£159.99

SPECIFICATION Price for pair inc. tubeless valves • Sizes: 1.8-3.0in tyres, 27.5in and 29in wheels (CushCore Plus 27.5 tested) • Weight: 140g to 330g • Contact: ison-distribution.com

CushCore is one of the original tyre inserts. Designed to protect your rim and tyre from pinch flats and dents, it is one of the more expensive inserts out there (£80 per wheel, all in), but it isn't just a puncture preventor. Let me explain.

Like most CushCore users I got these inserts to help with puncture prevention. Like most CushCore users I've ended up really, truly appreciating them for their other qualities. Sure, I've not experienced any pinch flats since installing them, but my real takeaway is how they can improve the ride of your bike and save you energy in the process.

What am I on about? Tyres fitted with CushCores offer the best of both worlds; supple on the small stuff, supportive when you need them. It's a bit like putting volume spacers in your suspension to achieve a soft initial touch with a firm, ramp-up deeper into the travel. These inserts enable you to ride with normal trail tyres (i.e. not downhill casing) and have the top half of the tyre super-supple whilst retaining sidewall support when cornering aggressively. The suppleness certainly helps improve traction on certain surfaces but the real surprise is how much rolling resistance is improved. The top of the tyre crumples so easily that it noticeably saves on physical exertion.

Much of a DH casing tyre's 'draggy' feeling is not actually from the knobs or sticky rubber compound, it's energy lost from the constant crumpling of the stiff tyre carcass. It's like having



a 120TPI XC tyre when you want one and a 60TPI Dual Ply DH tyre when you need one. These CushCores installed in a set of 2.6in Schwalbe Apex-carcass tyres has been amazing. Less sketchy. Less tiring. More miles. More fun.

Installing them is not easy, but read some tutorials and watch a few videos and you'll be fine. My tip: 'lube up' the inside of your tyre first by spraying on a soapy solution.

The advantages may be obvious then, but giving it a rating less so. Even after experiencing its wonders, at £80 the price still feels high.

Benji Haworth



PEATY'S TUBELESS VALVES

£22.50

SPECIFICATION 42/60mm lengths • 10 colours • peatys.co.uk

I firmly believe that every serious mountain biker should ditch their inner tubes for better performance. This means tubeless valve stems are an essential purchase, plus they need to be replaced occasionally as they can get damaged, bent or gummed up.

Peaty's valves come with a lifetime replacement warranty against cracking or bending, and also pack the excellent added feature of a dust cap with an oval hole in it that doubles as a valve core remover.

It's this detail I've found useful multiple times (if a pump accidentally



unscrews the valve core or you need to top-up sealant in a car park), but 10 funky colours will doubtless appeal to bike tarts too. They look and work great then, but Peaty's anodised 7075 aluminium valves with their snazzy O-ring tensioners do cost about £7 or £8 more than other brands.

Mick Kirkman



mbr
ratings
explained
*The scores
on the doors*



1-4 Something's wrong. It's rare, but sometimes a product will have a design flaw or some other weakness that means we can't recommend it. Steer clear.



5-6 OK — one or two faults but it has potential.



7 Good — worth considering.



8 Very good — for the money, we'd buy it.



9 Excellent — a slight mod or two and it might be perfect.



10 Simply the best — we couldn't fault it.

NEW PRODUCTS

VAUDE AM MOAB TECH SHOES

£160

SPECIFICATION Weight: 904g (pair) • Sizes: 36-48 • Contact: raleigh.co.uk

This is a first test of Vaude's new AM Moab Tech flat pedal trail shoe, and its most interesting feature is the BOA L6 dial and fixture system. If you're unfamiliar with BOA technology, it's actually very similar to the retention device on the back of your helmet, and tightens in a similar way by winding some plastic string onto a small spool. To release the tension (on this L6 version at least) the whole dial can then be pulled up and you slip your foot out as normal.

Obviously, this dial is a little fragile, so to

protect it from damage and dirt ingress, it sits under a Velcro strap. This is a good size and does keep muck out of the mechanism, but like most other flaps it has started to curl up at the edge.

The AM Moab Tech is built on a SUP traction soft rubber compound sole, but instead of some simple file pattern, Vaude uses a hexagon tread pattern, which apparently works a bit like fish scales that wedge into the ground to increase the mechanical grip. The sole at the toe and

heel area also feature deeper recesses to boost grip when trudging up steep stuff.

To protect your inner ankle, the shoe is cut a little higher on the crank side and there's also an anatomical-shaped Ortholite insole for added support and comfort. An anti-slip heel lining stops the shoe rubbing on big all-day rides and external toe and heel caps are solid and scuff resistant.

Whenever I get a new flat shoe to test everyone asks what's the rubber like compared to a Five Ten, so what is it like compared to a

Five Ten? The rubber on the AM Moab

Tech is surprisingly grippy and it's one of the best flat shoes if you have to do a lot of off-the-bike pushing. However, what I don't like is how flexy the upper feels.

It's almost like riding with your laces undone, and I think it's due to a combination of the BOA dial — I just couldn't get it tight enough — and

the lightweight mesh construction used

for the upper. So while the AM Moab Tech is flexy and also expensive, Vaude

does offer a laced version of this shoe, which might help on both counts. I have a pair on order, with a test to follow.

Paul Burwell



LIFELINE PAVO MOTION 2400

£149.99

SPECIFICATION Weight: 309g • Lumens 2,400, 1,200, 600 • Contact: hotlines-uk.com

The Lifeline Pavo Motion 2400 came too late for our big annual lights test, but I wanted to include it because it has a clever 'Motion Control' feature, which uses technology similar to that found in the Exposure Six Pack. Hidden in the Pavo Motion 2400 is a small gyroscope that senses when you stop moving and dims the light by 50 per cent. This happens gradually over a few seconds but it does light up again instantly when you start moving.

Obviously, this is not as sophisticated as the Exposure system, which actually dims the light when you're riding uphill or just slowly, but reducing the power this way does extend the run time. It's a neat feature, but I think the function is more applicable to road use rather than something you'd benefit from on the trails, simply because if you stop at the top of a climb for chat you can easily reach across and turn it down manually.

The Motion 2400 uses a similar machined aluminium barrel construction to the Six Pack but it's over 100g lighter and is much lower profile.

The mount fits 31.8mm bars and smaller with the rubber shim included. The bayonet-style fitting requires a twist to locate, the interface is solid and the light doesn't rattle.

With 7 Cree XP-G S4 LEDs mounted centrally, the Motion 2400 has a concentrated beam pattern, so getting the angle right can be tricky if you're switching from fire road to singletrack. The only other thing I'd like to see is a proper battery life indicator rather than the colour-changing button on top of the light.

If I don't really see the value in the Motion Control function for off-road riding, is there any point buying this light? Absolutely — because you can run the light in constant mode, which has output levels of 2,000, 1,000 and 500 lumens. It's also cracking value for a lamp with this much power, has a long run-time and charges quickly.

Paul Burwell



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19 Apr	New Forest Spring	Hampshire
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28 Jun	Peaks Tour	Derbyshire
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25 Jul	Malvern Mad Hatter	Worcestershire
9 Aug	Ride Yorkshire	North Yorkshire
5 Sep	Sussex Downs Classic	Sussex
19 Sep	New Forest 100	Hampshire
4 Oct	Box Hill Original	Surrey
17 Oct	Cobbler Classic	Northamptonshire
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*See event page for details




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HUTCHINSON GRIFFUS RACE LAB TYRE

£44.95

SPECIFICATION Weight: 1,050g • 27.5/29in • 2.4/2.5in • Black/Tanwall • windwave.co.uk

The Griffus is the first tyre under Hutchinson's rider-developed 'Race Lab' umbrella. Designed for enduro, there are specific front and rear versions, the former with a 2.5in width and the latter being 2.4in. The tread patterns are different too, based around sucker-like, hollowed-out blocks outside a pronounced 'grip' channel and more solid central paddles. Front tyre edge knobs are in line with central blocks, whereas the rear are offset for faster rolling speed. This 'lined up' front tread pattern is unusual, although Aaron Gwin's Aquila tyre also shares the trait to good effect.

Our first taste of the Griffus was in Italy, in Molini, as a direct swap for Maxx Grip DH-casing Assegais. Expecting a huge drop in grip levels (the slow-rolling Maxxis has very impressive control and braking/cornering hold), the French-made Hutchinson really surprised me.

On hard-baked, dusty rocks and roots, grip and surefootedness is very close indeed, with the added benefit of being way faster rolling. Plus the Griffus has a better damped, comfier and conforming carcass that is less fatiguing on long, rough descents. This smoothness and suppleness is a sweet Hutchinson signature I've noticed on all its meatier tyres too.

Triple compound, with a (claimed) 94a durometer base, soft 50a centre blocks and extra sticky 40a edge blocks, the Griffus's rubber hardness levels are more 'Maxx Grip' than 'Maxx Terra', and the carcass uses a thicker 66tpi casing with wrap-around Hardskin puncture protection

and an all-up weight of just over a kilo. So in the dry, in Italy, the tread and rubber compound gripped like stink and was really secure and planted at all lean angles, but how's the Griffus back in typical UK slop and slime?

Stable on wet roots and greasy mulch (provided the mud isn't too thick), it's not quite as locked down and planted as the Assegai (a Maxx Terra in the UK) on harder wet surfaces. This means there's a sense you can push that bit harder on the toothier Maxxis, amplified further when loam gets deeper or leaf litter is really gooey.

To be fair, the Griffus is more targeted at drier, hardpacked surfaces (where it excels) rather than wetter conditions, even though I found it way more versatile than advertised. Hutchinson's new tyre performs really well everywhere except in deep slop, and is another tough, durable, supple and tenacious tyre from a brand that ought to be more popular than it is.

Costing £45 (that's a chunk cheaper than nearly all other leading brands), makes it excellent value too for the top-level performance.

Mick Kirkman



BELL FULL-9 FUSION MIPS HELMET

£249.99

SPECIFICATION Weight: 1,030g • Sizes: XS, S, M, L, XL, 2XL • Colours: matte black, black 'Fasthouse', grey/black, yellow, grey/black/red • Contact: zyrofisher.co.uk

The Full-9 Fusion is a budget full-face DH helmet based on Bell's top-of-the-range carbon Full-9. It has the same shape, MIPS insert, breakaway peak and deep padding as the £425 version, but the cheek pads aren't magnetic and you don't get the built-in speaker pockets. It also loses the 'Eject Helmet Removal' system that helps with removing the helmet in the event of a big crash. This model is, however, around 50g lighter.

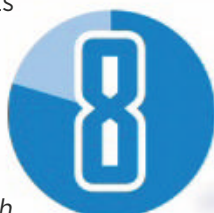
It looks and feels substantial, closer to a motocross helmet than an enduro mtb helmet. But the deep padding ensures it's secure and comfortable, and this in turn offers a real sense of safety and security while wearing it. Despite its size, the goggle aperture is big enough that you don't see any of the shell or the peak in your peripheral vision.

Ventilation is minimal compared to lightweight full-face options such as Bell's Super DH or Super 3R, and you do soon feel the heat on a warm day — this is very much a helmet for DH racing or shuttle days with limited pedalling efforts.

It's difficult to fully test a helmet without throwing yourself at the scenery, so with that in mind I set off down BikePark Wales's black-graded Dai Hard trail on a wet November afternoon. Bucked over the bars on a steep section, I dropped a long way mainly onto my head, shattering the peak but otherwise escaping intact — other than the broken peak, the helmet was externally unmarked. Replacement peaks are available for £29.99 but are only offered in black.

So it offers plenty of protection, but it's nowhere near as versatile as the latest crop of enduro helmets. If you're looking to expand your helmet collection with a bike park-ready full-face, it would make a good option. If you're starting from scratch and do lots of natural rides in demanding terrain, you might be better off with something like the Super DH.

Ben Smith





RIDE CONCEPTS LIVEWIRE SHOES

£99.95

SPECIFICATION Weight: 972g • Sizes: 7-13 • Contact: silverfish-uk.com

Ride Concepts impressed us with its Hellion shoe earlier in the year, delivering great grip and durability at a competitive price. The Livewire boasts much of the same technology that made the Hellion so good, but crucially does it for £20 less — a combination that could make it a real bargain trail shoe.

The most important tech on a flat pedal shoe is, of course, the sole. The Livewire uses the same DST 6.0 High Grip rubber outsole as the Hellion, meaning it sits at mid-density in the company's Rubber Kinetics range. It's a really grippy compound and holds your foot securely on the pedal almost as well as the superlative FiveTen Stealth rubber. There's not much in it though — it's only on really wet and muddy days, or when pushing up, when I've felt the Livewire could do with having a little bit more friction.

The Livewire has lasted better than most flat-pedal shoes I've tried, the sole still looks remarkably free of pockmarks even after six months of riding. That makes a lot of sense, given the slightly less grip on offer and harder wearing rubber. The synthetic upper is looking good too, and the moulded toe and heel box remain gouge-free. The shoe also features some great touches, like a supportive D30-equipped insole, quality laces and fully gusseted tongue to keep out loam and mud.

The Livewire could be improved

though, by adding less material to the EVA midsole. As it stands, your foot feels just a shade too high from the pedal, and it also makes the whole package too stiff. This means you can't wrap your foot around the pedal as you can with a Freerider, and this loses you some grip on the pedal too. Overall, though, the Livewire is stonking value; it's very comfy, protective, hardwearing and I even like the chunky skate shoe look.

Jamie Darlow



ONE UP 35MM CARBON HANDLEBAR

£115

SPECIFICATION Weight: 220g • Width: 800mm • Rise: 20 and 35mm • Contact: oneupcomponents.com

I tested One Up's new EDC stem and tool system a few months ago, but also new from the brand is a carbon handlebar. On paper it has pretty standard numbers, with eight degrees of backsweep, five degrees of upsweep and measures 800mm wide. But if you look closely you'll see the 35mm centre section transitions to a flattened, oval shape and then tapers to a standard 22.2mm at the controls. This profile is actually patented, and the idea is it combines the best ride characteristics of 31.8 and 35mm into a single package. Tested against other carbon and foam-filled aluminium bars, One Up claims this bar offers a 21 per cent increase in vertical compliance and a 28 per cent increase in steering stiffness. I can totally believe the vertical compliance figures because you can literally flex this bar by just putting your body weight through it. On the

trail it feels compliant and does dampen a lot of the chatter you experience in rocky sections.

I'm less convinced on the increase in steering response though. One Up has increased the stiffness in this fore/aft plane using the unique shape, but compared to my usual Renthal carbon bar, it didn't feel any more responsive when powering out of the saddle up climbs or when picking a line through slow, tight sections.

Do I prefer one over the other? That's hard to say, because steering response isn't just influenced by one component — it's a system. What I will say is that the One Up bar is definitely comfortable, and if you want to soften an overly stiff front end, or suffer from arm pump or wrist numbness, it's definitely going to help. The fact that it undercuts most boutique carbon handlebars by about £20 is a bonus.

Paul Burwell





Waterproof jackets and trousers

With a few months of rain ahead of us, don't worry, there's no such thing as bad weather...

Words: Paul Burwell Photos: Roo Fowler, Daniel Gould

If you want to keep warm, dry and comfortable in the winter there are two pieces of clobber you should own — a waterproof jacket and a pair of waterproof trousers. This combo will keep you smiling through the filthiest conditions, and allow you to get warm and dry faster at the end of a ride because you'll remain clean underneath.

Most mountain bike clothing brands make both tops and bottoms, but we've mixed things up a little in this test to give the broadest cross section possible. The cheapest trouser is the £50 Altura Nevis III and it's a simple lightweight pant made from a non-branded waterproof material. Jump to the top end and with the Endura MT500 you're looking at a more sophisticated

three-layer fabric and a ton of features. The same is true for the waterproof jackets, with simple coated nylon fabrics at the lower end and Gore-Tex at the top.

Top-end clothing obviously costs more, but it will be more effective at keeping out water, it'll breath better and may even be lighter and have more features. All the waterproof jackets and trousers on test will get the job done, it's just the more expensive kit will be a little bit more durable and a lot more comfortable to wear.

We've got six tops and bottoms in this test and there's nothing stopping you mixing and matching between brands. In fact we'd recommend it because some companies' jackets are better than their trousers and visa-versa.

USED & ABUSED

How we test

To verify the pooling of the DWR (durable water repellent) coating on the outer fabric of all our test samples we sprayed them with water, then scuffed the surface to see if any water would get through. With the jackets we then fitted the hood (if there was one) and battened down the hatches before giving them a good soaking. We did the same with the trousers. Then we ventured outside to test breathability, warmth and fit. We did dozens of trail rides in each jacket and trousers.

Know your waterproofs

WATERPROOFNESS

Most quality waterproof jackets and trousers are built from a laminate fabric, which consists of a waterproof/breathable membrane which is either sandwiched between two nylon layers or stuck to the inside of one (see below for details).

The membrane is the bit that keeps you dry and Gore-Tex is the most common brand.

All waterproof fabrics are rated for waterproofness and anything over 10,000mm is pretty watertight in normal conditions. Breathability is also rated — look for the MVTR (Moisture Vapour Transmission Rate) figure. Above 20,000g/m²/24hr means good breathability.



HOOD

Absolutely essential — a hood prevents water running down your neck and keeps heat in. Five of the jackets here have them. Most are designed to fit underneath the helmet, a few over the top and some can do both. The best hoods have dual adjustment, so you can get them tight against your bonce.

FABRIC CONSTRUCTION

Manufacturers describe their jackets as having two or three layers, but what does this mean? A two-layer fabric is made up of an outer-face fabric bonded to the waterproof membrane, usually with a mesh liner hanging inside. On a 2.5 layer, the mesh liner is replaced with a micro (or half) layer, which is either bonded or printed onto the membrane. A three-layer jacket has the membrane sandwiched between two nylon layers.



POCKETS

These are handy for keys, phone and tools. Look for a waterproof Napoleon or chest pocket on the jacket with a zipped rear pocket to stuff the whole thing into when not in use. Pockets are handy on the trousers but a waterproof zip is a must if you intend to stash a phone down low.



VENTS

To expel heat when pedalling hard you'll need some form of venting. Look for zipped vents under the armpits or over the chest area and also exhaust venting — simple slits over the shoulder blades. Opening mesh-lined pockets can also increase airflow. On the legs, vents are generally unnecessary but some of the pants here do have them.



ZIP

Some jacket zips are waterproof, some are not. If it's the latter you will need a storm flap to stop the water passing through. On a jacket, look for an easy to pull toggle and a zip gutter (garage) to stop the end of the zip cutting into your neck. On a trouser, look for a baffle gutter behind the fly to stop water ingress.

ADJUSTMENT

Adjustable cuffs, collars and hems stop water getting in but also help regulate airflow inside the jacket. To reduce weight, Velcro cuffs and ankles are often replaced with simple elasticated bands.



100% HYDROMATIC

£139.99

SPECIFICATION Weight: 235g • Sizes: S-XL • Contact: silverfish-uk.com

Although the 100% Hydromatic jacket is lighter and has a slimmer, tighter fit than the Giro Ambient, the two have a lot in common. It has very similar breathability and waterproof figures (10,000g/m²/24hr and 10,000mm respectively) and is pretty close in price too. We'd say it was on a par when it comes to how well the 2.5 layer laminate material works in wet weather, but the key difference is the Hydromatic lacks a hood. There is a decent amount of protection, but in driving rain we were unable to seal the neck area and we did feel more exposed to the elements.

The Hydromatic does have some nice touches and is built well. All the seams are fully taped, both side pockets feature waterproof zippers to keep your phone/wallet dry and there's some venting at the rear to help manage the internal temperature.

Like the Gore C5, the cut is tighter and more aerodynamic than some, which helps with overall wicking — remember moisture can't jump gaps — but the jacket is pretty straight across the back so there's less trouser overlap and spray does get in.

As a general winter riding jacket for cold days the Hydromatic is a good choice, but so far this year those have been few and far between. In a sense this jacket is a second purchase — it's perfect for a cold, dry day but for really foul weather our primary jacket would be a full waterproof, with a hood and double the waterproof numbers.

We really like the styling and slim cut of the Hydromatic and it's also great value for money but it's a step down from the Endura MT500 or Gore Bike Wear C5 in terms of wet-weather performance and keeping you dry.



ENDURA MT500

£199.99

SPECIFICATION Weight: 485g • Sizes: XS-XXL • Contact: endurasport.com

According to Endura, the MTR Shield jacket we tested last year is likely to be replaced, which is why we've upgraded to the heavier duty MT500 jacket this time round. It's more substantial due to a three-layer Exoshell 60 membrane sandwiched between the nylon layers, but it does have a claimed 60,000g/m²/24hr breathability rating, which is one of the highest we've seen. Waterproofing is rated to 18,000mm, which is not quite as lofty but it's still very good. Endura claims the ExoShell 60 membrane is also PFC free, making it somewhat environmentally friendly.

The MT500 has some great features for heavy winter riding. To keep out the wet, it's fully seam-sealed, although you have to be careful to follow the recommended washing advice, because 60-degree can delaminate the tape. There's extra inner cuffs with thumb loops to stop wind chill and adjustable external cuffs so you can seal up draughts. An over-the-helmet hood with side adjusters really brings it close in at the sides without restricting vision.

If and when the temperature rises, you can vent heat using the pit vents and also supplement those by opening the huge mesh lined front pockets — providing they're empty of course. A small pocket on the sleeve is handy for car keys and there's an internal mesh compartment perfect for a phone.

There are three little niggles — the strap to secure the hood is bigger than it needs to be, the jacket bunches around the stomach area when you lean forward, and the inner storm flap snagged in the zip constantly. In the plus column, overlap is really good at the rear and, for a three-layer jacket, the MT500 is unbelievably breathable. Build quality is excellent, it's good value and lightweight.



FOX FLEXAIR PRO 3L WATER

£210

SPECIFICATION Weight: 386g • Sizes: S-XXL • Contact: uk.foxracing.com

Like the Attack Pro Jacket we tested 12 months ago, the material used for the Flexair Pro 3L is soft touch, four-way stretch, Spandex/nylon blend. The jacket also gets a three-layer construction which means it has a nylon outer casing, a membrane and then a wicking inner layer.

The fabric is rated to 30,000g/m²/24hr for breathability and 10,000mm waterproofness. The latter isn't particularly high but all the seams are fully taped and there are waterproof zippers on the front to keep the water out. The Flexair Pro 3L also gets an over helmet hood, a feature the Attack Pro lacked, so you can really snug it up tight at the top if you're doing one of those epic winter moorland adventures. The problem is, once you've pulled the toggles on the sides tight, the excess elastic string just flaps around in your face as you ride along. These need to be much lower or self-contained, like on the Endura jacket.

Last year we said the Fox Attack Pro was comfortable but it was also expensive and didn't quite have the breathability of other jackets on test, and the same is true of the Flexair Pro 3L this year. The water resistance is better, but condensation build-up inside the jacket is quite high and after most rides there was moisture pooling on the inner fabric. There are two hip vents but they're really tricky to reach and also have really stiff zips.

If you don't get too hot when riding, or you're on an e-bike, the Flexair Pro 3L is a solid choice, but if you sweat buckets you'll need to carefully manage your temperature because this jacket is going to add to the clamminess.



GIRO AMBIENT

£119

SPECIFICATION Weight: 456g • Sizes: S-L • Contact: zyrofischer.co.uk

Initially we wanted to test Giro's flagship Havoc H2O waterproof, but it was out of stock, so we were sent the Ambient instead.

The thing is, this jacket is made from a three-layer windproof material that only has a 10,000mm waterproof rating and a 10,000g/m²/24hr breathability rating. The inside has a thermal fleece lining, so it's nice and toasty and keeps wind chill at bay, but once it starts raining heavily it can start to get overwhelmed.

The jacket also lacks a lot of features to help keep the rain out, like elasticated cords at the waist hem and hood. The fit is snug and it feels really warm, but it's really more of an après-ride garment than a proper technical riding jacket. The fleecy material also picks up a lot of splatter and the DWR, although present, isn't as effective as the other jackets here.

The Ambient does have long cuffs with thumb loops to stop the wind whistling up your arms, but there are no vents, other than a couple of small perforations in the armpits, to let you dump heat.

The hood will go over the top of a standard trail helmet, but it can get pulled off by the wind as there's no way to do it up tight.

We like the hand pockets on the sides, the snug fit, fleecy collar and the low price, but the Ambient is better utilised on a crisp winter's day rather than when there's steady rain and you're in for a good soaking. Don't get us wrong, this is a really good winter softshell, it just wasn't that effective in wet UK weather.



GORE BIKE WEAR TRAIL HOODED

£229.99

SPECIFICATION Weight: 248g • Sizes: S-XXL • Contact: gorewear.com

Last winter we tested Gore Bike Wear's C3 Gore-Tex Paclite, and this season we've upgraded to the C5 Gore-Tex Trail Hooded jacket. It uses a similar Gore-Tex membrane but it's 20g lighter and costs about £50 extra. It's also tighter fitting, the idea being that the closer the inner wicking layer is to your body the better it is at drawing moisture away and keeping you dry.

The C5 Trail Hooded features a small hood, which works best when it's under the helmet. Two elasticated laces on the side let you get it snug against the face so it doesn't flap around and you can't see it out of the corner of your eye when riding.

Internally all the seams are fully taped and there is an internal storm flap on the zip and a high collar. Unfortunately, due to the uneven seam edge we managed to snag the storm flap in the zip on almost every ride. We also broke one of the leashes out of the waist when tightening it for the first time.

Like the C3 Gore-Tex Paclite, this jacket doesn't have vents, but to be honest they're hardly necessary as it breathes so well. There wasn't a hint of internal condensation and the only dampness was at the rear, where splatter would eventually work its way between the jacket and trouser.

Gore doesn't go a bundle on carrying capacity with just two small side pockets and a Napoleon pocket for a phone and keys. We like the fact that it's minimal, it's stripped back with everything you need in a compact and incredibly lightweight package. It comes second best this time because the Endura just edges it on breathability and value.



LEATT DBX 5.0 ALL-MOUNTAIN

£190

SPECIFICATION Weight: 646g • Sizes: XS-XXL • Contact: hotlines-uk.com

The Leatt DBX 5.0 is made from a branded three-layer HydraDri fabric, which has a claimed breathability figure of 23,000g/m²/24hr and waterproofness rating of 30,000mm. With numbers like this it really does keep out the worst of the weather, but the downside is you know you're wearing it, because it's the heaviest jacket on test.

Since Leatt has a downhill focus with its pads and neck braces, it's no surprise the DBX 5.0 is substantial. It also has some gravity-specific features, which include abrasive resistant Brush Guard fabric on the elbows and shoulders, stiffened hood peak for use with a full-face, lift pass pocket on the forearm and built-in Microfiber goggle towel. The unique hood design features two magnets embedded in the fabric that apparently secure to sticky magnets that you apply to the outside of the helmet. Unfortunately, we haven't been able to test this feature because we thought the sticky magnet was part of the label and we chucked it in the bin by mistake — oops!

Further features include a waterproof zip, internal storm flap, two cavernous side pockets, two small hip vents, silicone strip on the rear hem to stop the jacket riding up, hidden reinforced stitching, sticky shoulder patches to stop unwanted backpack movement and a dirt/water/stain resistant coating.

If we rated waterproofs on the number of features, the Leatt DBX 5.0 would get an 11, but all this clobber adds weight and bulk. With its high waterproof rating and warmth, the DBX 5.0 is a great choice in freezing rain or for e-bike use where you're generating less heat and condensation.





ALTURA NEVIS III

£49.99

SPECIFICATION Weight: 208g • Sizes: S-XXL • Contact: zyrofischer.co.uk

We've tried to get some info on Altura's new Nevis III trouser, specifically what changes have been made over the previous two incarnations, but details have been hard to come by. It hasn't helped that we have no previous history testing this trouser so we don't even have a baseline to compare it to. What we do know is it's made from a simple treated nylon fabric, which means it has a DWR (durable water repellent) on the outside acting as the first line of defence to promote water pooling and run-off. The main waterproofness comes from a slightly shiny inner face and fully taped seams. In theory water shouldn't get past these two barriers, but it eventually did, especially in the seat area due to the constant grinding, which abraded the DWR decreasing its effectiveness and forcing this moisture through the fabric.

We've tested other jackets and trousers with this type of construction before and, while they look to be great value on paper, we found you really need to renew the DWR on a regular basis if you want to remain dry.

The fit of the Nevis III is basic too and it features a simple elasticated waist — no adjustable straps, no drawstring, no belt loops — meaning if it's too loose it's going to gradually fall down as you ride. There's also no fly or storage pockets. In fact, the only feature is an adjustable ankle closure which doesn't have a particularly wide range of adjustment.

Cheap and cheerful is how we'd describe this pant — it's light enough to carry in a pack, but if you want something you can wear all day there are better options here.



ENDURA MT500

£179.99

SPECIFICATION Weight: 259g • Sizes: S-XXL • Contact: endurasport.com

To balance breathability and durability, Endura combines two materials on the MT500 trouser — a four-way stretch reinforced material, with a DWR finish on the seat, and a durable three-layer waterproof Exoshell 60 fabric everywhere else, which is fully taped for added protection. As a result, this trouser doesn't feel like a typical clammy waterproof — it's a lot more flexible, fits better and breathability is off the chart at 60,000g/m²/24hr. Obviously this trouser is also 100 per cent waterproof and it also dries out really quickly too.

The waistband features a semi-elasticated section, but if you need to take up some slack there are also belt loops and a silicone strip on the inner waist to stop the trouser slipping down.

The unique feature on the MT500 is the side vents — they have two-way waterproof zips that actually go all the way to the ankles like stripper pants, which means you can put on/take off this trouser without having to remove your footwear or knee pads. This is a really versatile feature because it allows you to carry the trouser easily in a pack for when you need it and peel it off at the end of a ride taking all that mud with it.

Twin side pockets get waterproof zips and they're really generous — we actually did one ride with a water bottle stashed in one of them.

The MT500 is the most expensive pant on test, but it has some great features and is exceptional quality. It's also amazingly breathable and waterproof, so no matter what the weather is doing you're going to stay dry and warm. It doesn't take top honours because of the cost, and more testers preferred the cut of the Fox pant.





**TEST
WINNER!**
TROUSERS

FOX RANGER 3L WATER PANT

£135

SPECIFICATION Weight: 365g • Sizes: XS-XXL • Contact: uk.foxracing.com

You might not be able to tell from the pictures but the Fox Ranger 3L Water Pant doesn't have that typical nylon trouser construction, it's more of a soft shell. The face fabric contains a high percentage of Spandex, which means it has a four-way stretch ability, is less noisy and, in our opinion, is way more comfortable. But don't let that imply this trouser is less effective at keeping you dry because it's actually really good. It uses Truseal, a three-layer fabric that features a membrane middle layer to boost wicking and waterproofness. We don't have any figures but during tests we've found it breathes as well as the Endura MT500 pant and is close in terms of waterproofness.

To stop water ingress, all the seams are fully taped, there's a high quality DWR finish on the surface layer to shed moisture and dirt, and the fly has an internal baffle to stop water getting in. There's not a wide range of adjustment with the moto-inspired Race Ratchet Closure System, but this pant is tighter fitting at the waist than the Flexair pant we tested previously.

One of the best features of the Ranger is the tapered leg. This is featured on all Fox pants and not only does it keep any flapping material out of the chain it also stops it sagging down at the bottom, which is not a good look.

Compared to the Endura and Gore pants, the Ranger 3L is not quite as waterproof, but it was the preferred choice with testers. Some of this was definitely due to the styling, but on-the-bike comfort was way higher. Combine performance, comfort, fit and price and you have the best on test.




GORE BIKE WEAR C5 GTX TRAIL

£149.99

SPECIFICATION Weight: 209g • Sizes: S-XXL • Contact: gorewear.com

The Gore Bike Wear C5 GTX Trail pant is the companion bottom to the C5 jacket tested elsewhere and uses the same Gore-Tex fabric. Gore doesn't publish figures for the GTX Trail pant but during testing the breathability felt very similar to the jacket and it kept out most rain and spray.

One of the features Gore is keen to promote with the Gore-Tex Active fabric is it's softer, more comfortable and quieter. The GTX Trail pant doesn't have the plush feel of the Fox Ranger but it's not as heavy as the Madison and is more packable and dries quicker. It also didn't feel too clammy against bare legs, which is often one of the downsides with waterproof trousers. There's not as much shape in the front of this trouser compared to the Endura MT500, but it is articulated at the knee, so works well with pads. It's also reinforced in the seat, which is a really high-wear area.

There's a slight taper in the leg with a fold-over flap at the bottom, held in place via a press stud. The waist is elasticated and features a silicone gripper and simple drawstring to fine-tune the fit. Inside the waist there's a tiny pocket for a key, but it's only a mesh construction and doesn't have a permanent closure.

Compared to the Altura Nevis III, the GTX Trail has a bit more shape and the fit is slightly better but it's essentially very similar in design. The difference though, is the Gore trouser is way more breathable, it's fully waterproof and the overall fit and shape is way more refined. It's also three times the price, but if you really want to stay dry and clean it's worth paying.





MADISON DTE

£109.99

SPECIFICATION Weight: 433g • Sizes: S-XL • Contact: freewheel.co.uk

Madison offers several waterproof bottoms starting at the basic Protec, which is similar to the Altura pant tested here, and topping out with the DTE (Defy the Elements), a heavy-hitting waterproof trouser. Madison uses a 2.5 layer fabric (basically an outer nylon skin over a membrane with a printed inner surface) for the bulk of this pant, but at the seat, where most of the water can get through, it gets a thicker three-layer fabric. This reinforces this area but it adds weight, making it the heaviest trouser on test, and we found the DTE can hang down a bit at the back, especially when it's covered in mud. There's a silicone gripper on the waist to stop it slipping, but it's not particularly deep here and we'd actually like this, and most other trousers for that matter, to extend slightly upwards to stop any underlayers being exposed.

The waistband also features two Velcro straps and a press-stud fly, but the Velcro isn't particularly long, so we couldn't get it tight enough. Fully taped seams are featured throughout and, if you do overheat, there are some big side vents secured with waterproof zips. We used them constantly during this test to vent condensation, because the DTE does run quite warm when you're pedalling hard.

At the ankles there are a couple of adjuster straps to fine-tune the fit, but the shape isn't as tapered as the Gore and Endura options. The knees are articulated and roomy, so you can easily wear pads underneath, and this area is also reinforced with the three-layer material.

The DTE is heavy and it'll get heavier as it gets wet and dirty, so it runs hotter than most. This is OK for e-bikes, but for unassisted riding there are lighter and more breathable options available.



SCOTT TRAIL STORM WP

£143.99

SPECIFICATION Weight: 290g • Sizes: S-XXL • Contact: scott-sports.com

We're not big fans of the one orange lower leg, but Scott's Trail Storm waterproof pant is impressive. It's made from a branded DRYOsphere three-layer material, which has high-wicking and waterproof properties. It's also coated with a DWR to promote beading and run-off and this is also PFC free, which Scott claims is better for you and the environment.

The overall shape of this trouser is good too. It has a nice taper in the leg and plenty of articulation at the knees and extra material in this area, so you can wear knee pads without the trouser snagging or feeling tight. Scott even adds two mesh panels at the back of the knee to take some of the heat away when you've got pads in place. Two hips vents let you manage heat and these are a good size and feature waterproof zips.

The Trail Storm is one of two pants on test with a zipped fly, but it's backed up with an inner storm flap and Velcro button. Two Velcro waist adjusters let you fine-tune the fit, but like the Madison DTE pant, this trouser is a little bit low at the back and water thrown up from the rear wheel did work its way in quite quickly. We'd definitely like to see this area extended to keep out spray.

The Scott Trail Storm is a mid-weight trouser, and as such the material offers a high level of protection — equal to the Gore and Endura trousers. The leg shape and detailing are also up there, but where the Scott Trail Storm is lacking is in the low waistband and slim fit, which means we'd definitely recommend trying before buying.



Conclusion

Owniing a good waterproof is so important because you won't have fun if you're freezing cold and soaking wet, and, in extreme situations, it could save your life. We also think it's worth investing in a pair of waterproof trousers, because a wet lower half is not nice. You also have the added benefit of being able to peel off both top and bottoms, put them in a bag at the end of a ride and not get covered in filth. And when you get home they can be hosed down and put in the washing machine without destroying it; your mum/dad/partner/landlord will thank you. In an ideal world we'd also add some waterproof socks because there's nothing worse than cold feet.

If you just want to try a trouser for the first time, then the Altura Nevis III will give you a taste for £50. It's not 100 per cent waterproof or breathable, and the cut isn't that far removed from a pant you'd buy in an outdoor shop, but it'll work for a while.

At the opposite end of the scale is the heavy-duty Madison DTE. It has a ton of frontal protection, but it's bit low and exposed at the back, which is also a problem with the Scott Storm WP. We just think if these trousers had some form of rear panel that extended right up underneath your jacket they'd be a lot more effective.

The top three pants in this test are all very good, and while we recommend all of them, you can pick and choose depending on whether you prioritise ultimate weather protection (Endura MT500), packability (Gore Bike Wear C5 GTX Trail) or fit (Fox Ranger 3L). We just scored the Fox Ranger 3L trouser higher than the others because we felt it was better value and nicer to ride in.

We speculated about a new category



The right clothing combination can transform your ride

of e-bike jacket in last year's test, pointing out that a heavier jacket would be ideal for assisted riding. This year the jacket that does that is the Leatt DBX 5.0 — stormproof, durable and a ton of protection. Match this with the Madison pant and you have perfect e-bike suit.

The two best jackets in this test (Endura and Gore) were the two best jackets from last year. Both manufacturers produce high-end performance waterproof products, and that specialist experience really shows in the end products. This does mean it's been a bit of bunfight once again, but we have picked a winner.

The Endura MT500 and Gore C5 Trail Hooded are both amazing jackets, so your choice might be down to which one fits the best, the colour or the styling. For us it came down to price — the Endura MT500 is 10 per cent cheaper, which matters when they're this close. This MT500 also feels lighter because of the incredible breathability and the cut was just a little bit more generous. We still rate the Gore C5 Trail Hooded highly, and if you're looking for a minimal and efficient jacket this is it.



TEST WINNER! JACKETS

TEST WINNER! TROUSERS

The Fox Ranger trouser and Endura MT500 jacket were our winning pairing

JACKETS

	Price	Weight	Sizes	Contact	Rating
100% Hydromatic	£139.99	235g	S-XL	silverfish-uk.com	7
Endura MT500	£199.99	485g	XS-XXL	endurasport.com	10
Fox Flexair Pro 3L Water	£210	386g	S-XXL	uk.foxracing.com	7
Giro Ambient	£119	456g	S-L	zyrofisher.co.uk	6
Gore Bike Wear Trail Hooded	£229.99	248g	S-XXL	gorewear.com	9
Leatt DBX 5.0 All-Mountain	£190	646g	XS-XXL	hotlines-uk.com	7

TROUSERS

Altura Nevis III	£49.99	208g	S-XXL	zyrofisher.co.uk	6
Endura MT500	£179.99	259g	S-XXL	endurasport.com	9
Fox Ranger 3L Water Pant	£135	365g	XS-XXL	uk.foxracing.com	10
Gore Bike Wear C5 GTX Trail	£149.99	209g	S-XXL	gorewear.com	9
Madison DTE	£109.99	433g	S-XL	freewheel.co.uk	7
Scott Trail Storm WP	£143.99	290g	S-XXL	scott-sports.com	8

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INTENSE PRIMER 29 PRO

£5,599



**SANTA CRUZ HIGHTOWER
CC X01**

£6,599

CALIFORNIA DREAMIN'

Two well-matched rivals from the Golden State go head to head in our boutique trail bike shootout — which will shine the brightest?

Words: Danny Milner Photos: Roo Fowler

If money was no object, two of the brands most likely to be at the top of your wish-list are Intense and Santa Cruz. These two Californian rivals have been battling for the hearts and wallets of mountain bikers for decades. And that competition has only, ahem, intensified with the introduction of their two latest trail bikes — the Intense Primer and the Santa Cruz Hightower. Closely

matched in almost every facet, both these boutique bikes boast 140mm of rear wheel travel, 150mm forks up front and full carbon frames. They both come with flip-chips to adjust the geometry and suspension feel, grease ports for lubricating the bearings, threaded bottom brackets, internal cable routing and usable bottle cage mounts. Hell, they even share the same counter-rotating link

suspension design, even if it's labelled VPP on the Santa Cruz and JS Tuned on the Intense.

Where the two diverge is price. Santa Cruz is sold through shops while Intense deals direct to the public. This allows the Intense Primer to undercut the Santa Cruz Hightower by £1,000. All else being pretty much equal, it sounds like this test should be a walk in the park for Intense. Time to find out.

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BIKE TEST

Comes with a Maxxis Aggressor rear tyre that's fast rolling but sketchy in the wet

Carbon upper link and titanium hardware save weight and add a touch of exotica

Choose between Low and Lower geometry settings

Lower link features a grease port for easy bearing lubrication

INTENSE PRIMER 29 PRO

£5,599

SPECIFICATION

Frame Full UD carbon, 140mm travel

Shock Fox Factory Float DPX2

Fork Fox 34 Factory, 150mm travel

Wheels e*thirteen LG1 Enduro Race, Maxxis High Roller II 3C/Aggressor 29x2.5/2.3in tyres

Drivetrain Truvativ Stylo 6K Eagle carbon 32t chainset, SRAM X01 Eagle r-mech and GX shifter

Brakes Shimano XT four-piston front, two-piston rear, 180mm

Components Intense Recon Carbon 780mm bar, Intense Recon Elite 50mm stem, Fox Transfer 150mm dropper post, Fabric Scoop Radius saddle

Sizes S, M, L, XL

Weight 12.98kg (28.61lb)

Contact intensecycles.co.uk

GEOMETRY

(LOWER SETTING)

Size tested L

Head angle 64.6°

Seat angle 69.4°

BB height 330mm

Chainstay 440mm

Front centre 794mm

Wheelbase 1,234mm

Down tube 740mm

Top tube 638mm

Reach 459mm

Until recently, Intense's trail bike range took a scattergun approach, with five different models to choose from. For 2020 it has zeroed its sights, focusing on just a single trail bike: the Primer. That said, this new chassis is offered in several configurations; choose either 29in or 27.5in wheels, or a combination of the two in the shape of the intriguing Primer S mullet bike.

In its previous guise, the featherweight Primer was scalpel-sharp with a hair-trigger response and the ability to make you feel both 10 years younger and 10mph faster. The revised model is much sturdier, with a stiffer swingarm, an additional 10mm travel, a chunkier frame and reworked linkage that changes the suspension characteristics.

Designed by Cesar Rojo's Barcelona-based CERO studio, the new Primer retains the sharp lines of the old bike, but adds some modern touches, such as a hidden upper link pivot, seamless seatpost clamp and comprehensive rubber frame protection.

While certain elements of the geometry have evolved — the head angle is over 2° slacker — others haven't; the reach on our size large frame is only 6mm longer than its predecessor and the seat angle has got slacker.

SUSPENSION

The 150mm Kashima-coated Fox suspension is top-of-the-range, but the 34 fork leaves the front end looking anaemic. Fox doesn't usually offer the 34 with more than 140mm travel, which means Intense has chosen to go beyond that limit, and the result is a lack of stiffness. This means it's hard to place



the bike with complete confidence or trust the steering when pushing hard. A much better choice would have been to fit the stiffer 36 — found on the Primer S — to the entire range.

At the back, the Float DPX2 shock can be run in two different positions, which allows you to change the head angle by +/-0.6° and the BB height by +/-8mm. A side effect is that the suspension also has more progression in the lower position. Swapping between the two is easy and the hardware is chunky, so there's less chance of losing vital bits by the trailside.

Dual uprights stiffen swingarm over predecessor



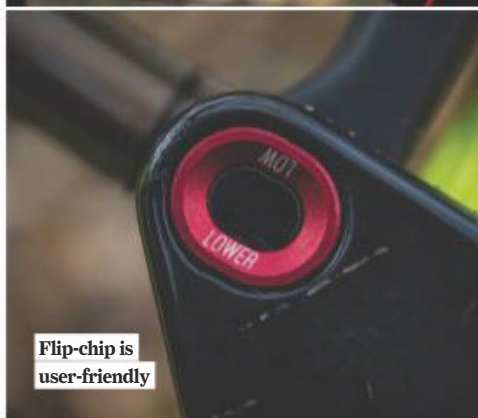
HIGHS
Good
value



LOWS
Feels old
school



150mm-travel Fox
Factory 34 fork
lacks stiffness



Flip-chip is
user-friendly

COMPONENTS

Intense has opted for a mix-and-match approach to the components. While the SRAM drivetrain worked reliably during our test, the Shimano XT rear brake suffered from a constantly shifting bite point. There's plenty of power — especially from the four-piston caliper up front — and a light action, but we could never be sure just how far we needed

to pull the back brake before the pads would hit the rotor. Intense has decided not to fit the new versions either, which seems like a missed opportunity.

Compared to the Hightower, the Primer has a long seat tube and a short dropper post. In fact there's around 20mm difference between both bikes, and that hampers how aggressively you can ride it on steep descents and rough terrain. It also restricts the potential for moving up a frame size.

PERFORMANCE

Initially we set up the Primer with 30 per cent sag, but the bike would drop easily into the mid-stroke and we never got anywhere near full travel (more like 110mm). The reason for this is a combination of the end stroke progression from the linkage and the large volume spacer inside the shock. Intense says this is because it wanted the Primer to ride high in the travel and feel responsive under power. All well and good, but you end up riding around with a load of travel you can't use.

To increase the operating window, we tried various smaller volume spacers, eventually settling on the 0.6in, instead of the stock 0.9in. This allowed us to get full travel with our sag at 30 per cent, but the first half of the stroke was still used up in the blink of an eye, and then

we'd start to hit a wall towards bottom out. To help generate some support in the mid-stroke, we added lots of low-speed compression damping. It worked — to a degree — but the compromise was greater harshness.

On technical climbs, the lack of mid-stroke support, combined with the low BB, meant that we regularly used the compression lever to avoid striking pedals. Fortunately the shock position under the top tube means it is always within easy reach.

VERDICT

Although the raw speed of the old Primer has been diluted in its new guise, this new version remains a fast bike that handles pretty well, and it would suit a more traditional diet of trail centre singletrack, where long, gradual climbs mix with flowing descents.

Where it begins to miss the mark are on bike park-influenced trails, when you really load up the suspension into corners and jumps, as well as rough, challenging downhill, because the suspension doesn't feel consistent and the front end lacks precision. For a brand new platform, it has one foot in the past. That said, it is a grand cheaper than the Hightower CC X01, and even the fully loaded, top-of-the-range Primer Elite with carbon wheels still manages to undercut the Santa Cruz by £100.

7

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SANTA CRUZ HIGHTOWER CC X01

£6,599

SPECIFICATION

Frame Carbon CC, 140mm travel
Shock RockShox Super Deluxe Ultimate
Fork RockShox Lyrik Ultimate RCT3, 150mm travel
Wheels DT Swiss 350 hubs, Race Face ARC30 rims, Maxxis Minion DHR II WT 3C EXO 29x2.4in tyres
Drivetrain SRAM X1 Eagle Dub 30t chainset, SRAM X01 Eagle r-mech & shifter
Brakes SRAM Code RSC, 180mm
Components Santa Cruz AM carbon 800mm bar, Race Face Aeffect 50mm stem, RockShox Reverb Stealth 170mm post, WTB Silverado Team saddle
Sizes S, M, L, XL, XXL
Weight 13.25kg (29.2lb)
Contact santacruz bicycles.co.uk

GEOMETRY

(LOW SETTING)

Size tested L
Head angle 64.6°
Seat angle 68.6°
BB height 336mm
Chainstay 435mm
Front centre 793mm
Wheelbase 1,228mm
Down tube 741mm
Top tube 619mm
Reach 466mm

Before the version 2 came out earlier this year, the Hightower used a similar design to the Primer, with the shock driven by a short swing link beneath the top tube. That's all changed now, with almost the entire Santa Cruz range adopting a lower link-driven VPP arrangement first seen on the V10 downhill bike. Simply put, by using the lower link to drive the shock, the leverage rate remains more consistent throughout the stroke, so it's easier to tune the shock and set up the suspension.

To accommodate the shock, the frame uses a pierced seat tube design, where the RockShox Super Deluxe passes through a moulded tunnel and anchors to the base of the down tube. There's enough room for a bottle cage within the main triangle, but the compression threshold lever is much harder to reach when climbing, and it's more difficult to see the red O-ring when setting up the sag.

SUSPENSION

Getting the 150mm-travel Lyrik Ultimate fork set up is simple. We ran around 10 per cent more air pressure than recommended by the chart printed on the left leg, left the rebound almost wide open and added a couple of clicks of low-speed compression damping.

It's the same story with the shock; we found our recommended pressure on the Santa Cruz website, set the sag and the damping and didn't touch it again for the duration of the test.

Like Intense, Santa Cruz uses a flip chip at the rear shock mount to let you tune the geometry and suspension feel.

This one only has around half as much effect though, and it is fiddly to access. To stop the chip falling into the gap between the swingarm and the frame, we'd recommend wedging it in place with a plastic tyre lever when you remove the shock bolt.

COMPONENTS

The full SRAM spec on the Hightower CC X01 might seem run-of-the-mill, but it works. The Code brakes have a little less initial bite and a firmer spring than the XT models fitted to the Intense, but they stop just as well without any consistency issues. Shifting was precise and the dinky 30t chainring eased the strain on grinder climbs.

Thoughtful details include a small mudguard to protect the shock from dirt, bearings in the rear shock eyelet to reduce friction, excellent Palmdale grips and Maxxis Minion DHR II Wide Trail 3C tyres, and oversize Torque Caps fitted to the DT front hub to maximise stiffness.

PERFORMANCE

The Hightower is one of those bikes that delivers results without any fuss or fanfare. It manages to entice and excite at every turn, and the more we rode it, the more we appreciated its abilities.

First, the climbs. Although the actual seat angle is slacker than the Intense, the effective seat angle at our max saddle height is 2° steeper, so you sit further forward over the bottom bracket. Allied to the supportive suspension, this means it's more efficient when pedalling. There's more stability too, so there's no need to stretch down for the compression lever.

Tip into a descent, no matter what gradient, and the Hightower instantly feels predictable and engaging. You can lean it in at MotoGP angles and load up both tyres for carving turns, or push into the travel to generate speed or pop to clear obstacles. Wherever you are in the stroke, it feels consistent, so you never have to second-guess what the suspension is doing. That leaves you headroom to concentrate on pushing harder, braking later or hitting more challenging lines. And there's more legroom too, because that saddle drops right out of the way. So much so that we could easily move up a size to the XL frame and still run a 170mm dropper with plenty of standover clearance.

VERDICT

The new Hightower is alert, rewarding, inspiring and refined — all the things that you'd hope for at this price — and it's almost impossible to find a chink in its armour, whatever kind of terrain you put in front of it. Previous complaints, such as the US-biased cable routing, have finally been fixed on this latest model, and Santa Cruz has even made the rear centre longer on the XXL frame so that taller riders won't get left hanging off the back. It feels right from the very first pedal stroke, and encapsulates the versatility that defines every great trail bike.

10



HIGHS

Everything you could want from a trail bike

LOWS

Missing an upper chain guide

SRAM drivetrain put in a flawless performance

Pierced seat tube houses RockShox Super Deluxe shock with 140mm of travel

Mudguard protects the shock from the worst filth

Conclusion

That two bikes can be so similar on paper — sharing travel, frame material, features and the same basic suspension design — yet so different in ride quality and performance, just shows how you can never judge a bike by its spec sheet.

Despite being a couple of months younger than the Santa Cruz Hightower, Intense's Primer actually looks and rides like it's much older. While the frame is certainly sturdier than its predecessor, the fork has been overstretched for this application and feels spindly when loaded up. Out of the box, the JS-Tuned suspension feels less resolved. It falls too easily into the sag position then ramps up so aggressively we couldn't get anywhere near full travel. Switching volume spacers improved the situation, but we were still left with a frustrating mid-stroke hammock. Yes, buying direct from Intense UK means you can customise things like volume spacers, but with the Santa Cruz you simply don't have to do so.

Ironically, a lack of support in the middle of the travel was a recurring criticism of the old upper-link driven Santa Cruz bikes. And while the latest shock designs with larger negative spring volumes have helped mitigate the problem, Santa Cruz only really fixed this trait when it moved to the lower link design used on the Hightower. That it has now switched its range wholesale across to the new design speaks volumes.



The Hightower raises the bar with performance to match its price tag

RANGE FINDER

Our test winner's stablemates

SANTA CRUZ HIGHTOWER C S

£5,399

Santa Cruz makes the carbon Hightower in two versions: C and CC. The CC model uses stronger, more expensive carbon, which saves weight. The C version is heavier (2-300g) but cheaper. For £1,200 less than the CC X01, you can have the C S with the heavier frame and a few downgraded parts. And without a close inspection, no one will be any the wiser.

SANTA CRUZ HIGHTOWER D

£3,099

For half the price of the model we've tested, the alloy-framed D model is the entry to the range. Although the whole bike is significantly heavier (2.5kg according to Santa Cruz) it gets the same suspension kinematics and geometry as the more expensive models. More importantly, the sizing is excellent, so if you're a taller rider struggling to get a good fit, this could be the answer.



Even if the suspension was perfect, the sizing on the Primer is conservative, and with a lanky seat tube you're limited when it comes to choosing a bigger frame. So for a brand new bike, the Primer feels outdated in places. Yes, the financial savings over a similarly equipped Hightower are certainly tempting, but if you ride hard on progressive trails, the Primer will always feel compromised.

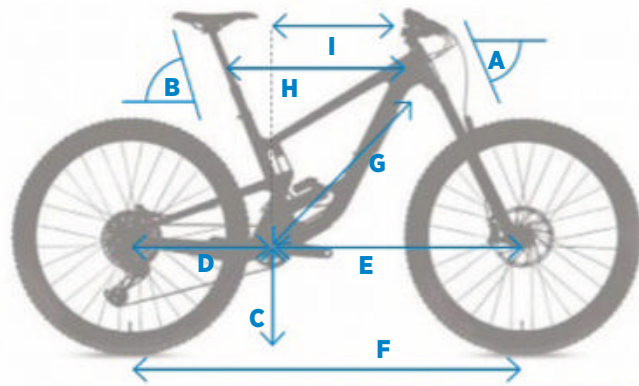
Santa Cruz has come a long way in the last few years. While it's always been an exclusive, aspirational brand, until recently its bikes were regularly underwhelming. The sizing was ultra-conservative and the suspension never quite delivered a magic carpet ride that matched the price tag. Now though, bikes like the Hightower boast the performance to back up the image. Adopting the lower-link suspension layout was derided at first, with many people turned off by the appearance of the latest Nomad when it came out in 2017. But now the layout looks perfectly normal, and with the whole Santa Cruz family sharing similar DNA, the latest



NOTES ON THE NUMBERS

Seat tube showdown

As you can see from the chart, the Primer and the Hightower share very similar numbers. The BB is a touch lower and the chainstays a little longer on the Primer, while the reach is slightly more generous on the Hightower. In terms of geometry, what really differentiates the two bikes when you ride them is the seat tube measurement. On the Primer that's 460mm, combined with a 150mm dropper post, whereas the Santa Cruz's seat tube is only 435mm but you get a 170mm dropper post. That means the Santa Cruz's saddle is always going to be tucked 20mm further out of the way when fully slammed, which lets you ride more dynamically. As a bonus, there is also the potential for riders of average height (5ft 10in) to upsize to an XL frame and still get acres of clearance, as the standover height doesn't change.



	Intense	Santa Cruz
A Head angle	64.6°	64.6°
B Seat angle	69.4°	68.6°
C BB height	330mm	336mm
D Chainstay	440mm	435mm
E Front centre	794mm	793mm
F Wheelbase	1,234mm	1,228mm
G Down tube	740mm	741mm
H Top tube	638mm	619mm
I Reach	459mm	466mm

SPECIFICATION

This month's bikes at a glance

Make/model	Intense Primer 29 Pro	Santa Cruz Hightower CC X01
Price	£5,599	£6,599
Weight	12.98kg (28.61lb)	13.25kg (29.21lb)
Contact	intensecycles.co.uk	santacruz bicycles.co.uk
FRAME		
Sizes	S, M, L, XL	S, M, L, XL, XXL
Size tested	L	L
Frame material	Full UD carbon	Carbon CC
Suspension fork	Fox 34 Factory Fit4	RockShox Lyrik Ultimate RCT3
Rear shock	Fox Factory DPX2	RockShox Super Deluxe Ultimate
Front travel	150mm	150mm
Rear travel	140mm (134mm measured)	140mm (135mm measured)
WHEELS		
Hubs	e*thirteen 110/148mm	DT Swiss 350 110/148mm
Rims	e*thirteen LG1 Enduro Race 30mm	Race Face ARC30 30mm
Spokes	Triple butted	DT Competition Race
Tyres	Maxxis High Roller II 3C /Aggressor 29x25.5/2.3in	Maxxis Minion DHR II WT 29x2.4in
GROUPSET		
Shifters	SRAM GX Eagle 1x12	SRAM X01 Eagle 1x12
Cassette	SRAM XG1295 Eagle 10-50t	SRAM XG1295 Eagle 10-50t
Rear mech	SRAM X01 Eagle	SRAM X01 Eagle
Crank	Truvativ Stylo 6K, 32t, 170mm	SRAM X1 Eagle, 30t, 170mm
Bottom bracket	Truvativ DUB BSA	SRAM DUB BSA
Brakes	Shimano XT M8020/M8000	SRAM Code RSC
Rotor sizes	180/180mm	180/180mm
COMPONENTS		
Saddle	Fabric Scoop Radius	WTB Silverado Team
Seatpost	Fox Transfer Factory 150mm	RockShox Reverb Stealth 170mm
Handlebar	Intense Recon Carbon 780mm	Santa Cruz AM carbon 800mm
Stem	Intense Recon Elite 50mm	Race Face Aeffect 50mm
Rating		

consensus seems to be overwhelmingly positive. It's done wonders for the performance too, and from the first pedal stroke it feels like you can ride the new Hightower to your absolute limits and beyond.

With five frame sizes and up to 518mm reach, getting the perfect fit is simple, and it's made even easier by the impressive standover heights that are found throughout the range. All the components are well chosen and the shock perfectly tuned, so with the lifetime warranty tucked away in your back pocket, you really can focus 100 per cent on riding hard and having a blast.

CONTROL TYRES

To make the testing process as fair as possible, we fitted Maxxis Minion DHR II 29x2.4in WT 3C Maxx Terra EXO control tyres to both bikes in this test. Price £59.99 each, extrauk.co.uk



29ER TRAIL HARDTAILS

Big wheels are well suited to hardtails but brands have been slow to use them on their latest trail models. Two that have are Norco and Specialized, but which has done a better job?

Words: Charlie Collins Photos: Roo Fowler

Twenty-niner hardtails have long been the preserve of XC racing, the larger hoops offering improved rollover while maintaining momentum and increasing stability and traction. Good traits on any mountain bike, but arguably even more critical on those with no rear suspension.

It's somewhat surprising, then, that bigger wheels have been slower to gain traction in the aggressive trail hardtail category. Two brands from across the pond that look set to change that are Norco and Specialized.

And it is not just 29in wheels, attitude and origin that the Norco Torrent and Specialized Fuse share. Both bikes have size-specific chainstays that help balance weight distribution and handling across the entire range of frame sizes. Norco opts for two fixed chainstay lengths, 420mm on the size small and medium, then going up 5mm on the large and XL Torrents. Specialized has adopted a different approach, using neat slotted dropouts to offer a range of adjustment from 420mm to 435mm on all four frame sizes.

There are key differences between the bikes too. The Specialized Fuse has more conservative sizing and geometry than the Norco, and even though both bikes have RockShox 35 forks leading the charge, the Norco has 150mm of travel versus Specialized's 130mm.

Possibly the biggest difference, though, is that the Norco is over 2kg (4.4lb) heavier than the Specialized — the bulk of the extra weight carried in the slender cro-mo steel frame. Will the improved ride quality of the steel tubing offset the extra weight of the Norco, or will the lighter, more agile Specialized rocket ahead in the ratings? It's time to find out...



TESTED
THIS
MONTH



NORCO TORRENT S2

£1,845



**SPECIALIZED FUSE
EXPERT 29**

£1,649



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BIKE TEST

Minimal chainstay protector: no problem. The low-slung chainstay keeps it out of harm's way

Available in two models or a frame only for £575

Comes stock with 2.5in Wide Trail Maxxis Assegai tyres, and the Torrent has clearance for up to 2.6in rubber

Size-specific chainstay lengths: S and M: 420mm, L and XL: 425mm

NORCO TORRENT S2

£1,845

SPECIFICATION

Frame Double Butted cro-mo

Fork RockShox 35 Gold, 150mm travel

Wheels Novatec 110/148mm hubs, e*thirteen LG1 EN rims, Maxxis Assegai EXO+ 29x2.5in tyres

Drivetrain SRAM SX Dub Eagle 30t chainset, SRAM SX Eagle r-mech and 12-speed shifter

Brakes TRP G-Spec Trail S, 180mm

Components Norco 6061 alloy 800mm bar, alloy 50mm stem, X-Fusion Manic 150mm post, Fizik Taiga saddle

Sizes S, M, L, XL

Weight 16.18kg (35.67lb)

Contact evanscycles.com

GEOMETRY

Size tested L

Head angle 64.4°

Seat angle 74.9°

BB height 325mm

Chainstay 424mm

Front centre 812mm

Wheelbase 1,233mm

Down tube 757mm

Top tube 630mm

Reach 476mm

Slender steel tubing wrapped in a purple powder coat gives the entry-level Torrent S2 a distinctly retro look. But make no mistake, this is a thoroughly modern 29er trail hardtail.

With a slack 64.4° head angle and rangy 476mm reach on the size large, it's primed for going fast and having fun. And if you still have any doubts about its intentions, Norco's Gravity Tuned geometry should reassure you. First developed for the Aurum downhill bike, the Gravity Tune tweaks the horizontal position of the BB so the rear end increases by 5mm on the L and XL frames to maintain the same balanced handling.

In fact, when we ran the tape measure over the Torrent, only one measurement had us scratching our heads, and that was the BB height. We know from testing hundreds of hardtails that 300mm is bob-on for most conditions, so at 325mm (8mm lower than claimed), the Torrent's BB height raised more than an eyebrow.

SUSPENSION

With the Specialized and Norco both rocking non-series RockShox 35mm forks, there is nothing separating them in terms of small-bump sensitivity or support. Yes, the Norco has 150mm travel, but the real advantage here is that you have slightly more sag, so the fork can extend into holes better to maintain traction. Set-up was simple, and if you don't know where to start, you can just download the RockShox TrailHead app to your phone and enter the serial number on your fork to get some recommendations.



COMPONENTS

In SRAM's drivetrain hierarchy the NX Eagle kit on the Specialized gives it a theoretical advantage over the SX Eagle fitted to the Norco. In practice, however, we couldn't distinguish any difference in performance.

TRP brakes are used by some of the fastest riders in the world, but it's rare to see them on a stock bike. Once bedded in, the G-Spec Trail S brakes worked well, but the lever feel is wooden and the lever profile a touch too square. ➡

In-house cockpit with 50mm stem



HIGHSDamped
ride qualityMaxxis Assegais tyres
hold firm when corneringTRP brakes work well
but are let down by
substandard levers**LOWS**Heavy. BB is
too high

We had no complaints about Norco's choice of tyres though — 2.5in Maxxis Assegais with the tougher EXO+ casing aren't the lightest for trail riding, but the cornering confidence they provide is well worth the weight penalty, especially given the increased durability of the thicker casing.

PERFORMANCE

It's universally accepted that steeper seat tube angles improve climbing efficiency on full-suspension bikes, so the same should be true for hardtails, right? Yes, the 74.9° seat tube angle on the Norco helps keep your weight forward on climbs, and prevents the bike from looping out with the relatively short 425mm rear end. But the more upright design also gives the seat tube less chance to flex under load. The end result is that even though the steel tubing of the Norco frame offers a slightly more forgiving ride than the Specialized when standing up, it's more punishing when seated. It doesn't help that the Fizik Taiga saddle lacks padding and is slippery when wet.

So the Norco makes more sense when spinning leisurely up smooth fire road climbs followed by rowdy steep descents. In fact, due to its weight and slower-rolling tyres, it feels almost pedestrian on anything other than the

steepest, most technical descents. Which makes the elevated BB height even harder to comprehend. With the higher BB you need to raise the handlebar quite a bit to help clock your body position rearward and counteract the higher centre of gravity. The end result is a balanced ride, albeit an elevated one.

That said, once gravity is working with you, the Norco Torrent starts to gush. The extra weight and length make it very stable and planted at speed, so you can open up the taps and let the bike flow. Despite the lack of chainstay protector, it's whisper silent too, which just encourages you to go faster.

VERDICT

We loved the damped feel of the Norco's butted steel tubing, but it's not enough to stop the Torrent S2 from being something of a one-trick pony. So while it's great at slowly grinding its way up smooth fire-road climbs to bomb the best descents, on any trail with a less advantageous gradient, its extra weight makes it feel sluggish and slow to respond.

Also, the elevated riding position that goes hand-in-hand with the lofty BB height makes you feel more detached from the bike, and we still can't fathom why any hardtail needs this much ground clearance.

7



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Adjustable frame dropouts give a 15mm range of chainstay adjustment

With four frame sizes to choose from, the compact design makes it easy to upsize without running out of standover clearance

Grid casing tyres add meat to the sidewalls without robbing the Fuse of rolling speed

Entry-level Fuse Comp 29 costs £1,299 and shares the same M4 alloy frame as the Expert

SPECIALIZED FUSE EXPERT 29

£1,649

SPECIFICATION

Frame M4 Premium aluminium

Fork RockShox 35 Gold RL, 130mm travel

Wheels Specialized sealed 110/148mm hubs, Specialized SL rims, Specialized Butcher/Purgatory GRID 29x2.6in tyres

Drivetrain SRAM NX Eagle DUB 30t chainset, SRAM NX Eagle r-mech and 12-speed shifter

Brakes SRAM Level TRL, 200/180mm

Components Stout Riser 780mm bar, Stout 3D-forged alloy 50mm stem, TranzX 150mm post, Bridge Comp saddle

Sizes S, M, L, XL

Weight 14.12kg (31.13lb)

Contact specialized.com

GEOMETRY

Size tested L

Head angle 66.3°

Seat angle 71°

BB height 313mm

Chainstay 420-435mm

Front centre 761mm

Wheelbase 1,181-1,196mm

Down tube 736mm

Top tube 635mm

Reach 455mm

Launched as an early-season 2020 bike, the new Specialized Fuse blends a lightweight alloy frame with 29in wheels and a 130mm fork to create the most aggro trail hardtail from Specialized to date.

Beneath the raw finish, the M4 aluminium frame is simply brimming with tech. The slender seatstays have been manipulated to offer a more compliant ride, and combined with the curved seat tube that allows a little flex, the Fuse frame is designed for increased comfort in or out of the saddle.

Our favourite feature though, is the adjustable dropouts. By sliding the 12mm rear axle horizontally you have the choice of a super-short 420mm rear end for increased agility, and up to 435mm for a more stable ride. It's a sleek design where integrated chain tugs within the compact dropouts prevent the hub from moving under power. Removing the rear wheel is as straightforward as any other 148x12mm design, but best of all, it only takes a few minutes to adjust the chainstay length, so it's easy to experiment with different settings out on the trail.

To achieve the necessary clearance for the 2.6in tyres, while retaining that super-short 420mm chainstay position, Specialized uses an elegant, elevated driveside chainstay. It runs perilously close to the upper run of chain though, but thanks to the rubber chainstay protector and the impressively resilient ride, the bike is rattle-free.

Cutting-edge as Specialized's frame tech is, it is more conservative with the geometry of the Fuse. At 66.3° the head angle isn't particularly slack for a modern trail hardtail, and with a 313mm

BB it's 10mm higher than it needs to be. Granted, it's nothing like as high as on the Norco, but the Specialized is also over 20mm shorter.

SUSPENSION

We've long been convinced that 130mm travel is optimum on a trail hardtail as it limits large variations in the dynamic geometry when cornering hard. So, on the face of it Specialized has totally nailed the fork spec on the Fuse Expert 29 with the 130mm-travel RockShox 35 Gold. Not so fast.

Because the Fuse has a relatively short head tube, even with the stem at full height we felt too over the front of the bike. This forced us to run the fork higher in its travel to compensate, which meant we had to forgo the final 20mm of travel. Thankfully, the larger-volume negative spring meant that the fork still felt supple, with plenty of control over bumps.

COMPONENTS

Specialized is one of only a handful of brands that takes advantage of RockShox's Torque Cap compatibility, fitting bigger 28mm end caps to the front hub for increased stiffness and steering precision. And because the hub is now a perfect fit in the cupped fork dropouts, you get the added benefit of making it much easier to locate the 15mm thru-axle when fitting the front wheel.

We mentioned earlier that the bar height on the Fuse was a tad low due to the stubby head tube, but there's no faulting the quality of the components. The 780mm bar has a great profile and the saddle is well padded without being too soft, so it offers ample support. Even

the under-bar remote for the TranzX 150mm post felt great.

PERFORMANCE

After playing around with the adjustable dropouts we settled on a slightly shorter set-up, to help take some weight off the fork and combat the low front end. And that's the real beauty of this design; it gives you options, including single-speed conversion.

With the shorter rear end, the Fuse felt more balanced on the steep and when cranked over in turns, even if it felt like a slight compromise. Switching to Maxxis Assegai 2.5in tyres lowered the BB a hair, and while the softer compound robbed the Fuse of some pace, it was still easier to accelerate and more playful than the Norco thanks to that 2kg weight difference.

VERDICT

The Fuse Expert 29 is a fast, fun and efficient alloy hardtail, but best of all it doesn't shake the life out of you on rougher trails. But rather than simply making up the numbers in the trail hardtail category, Specialized could tweak them and lead the way.

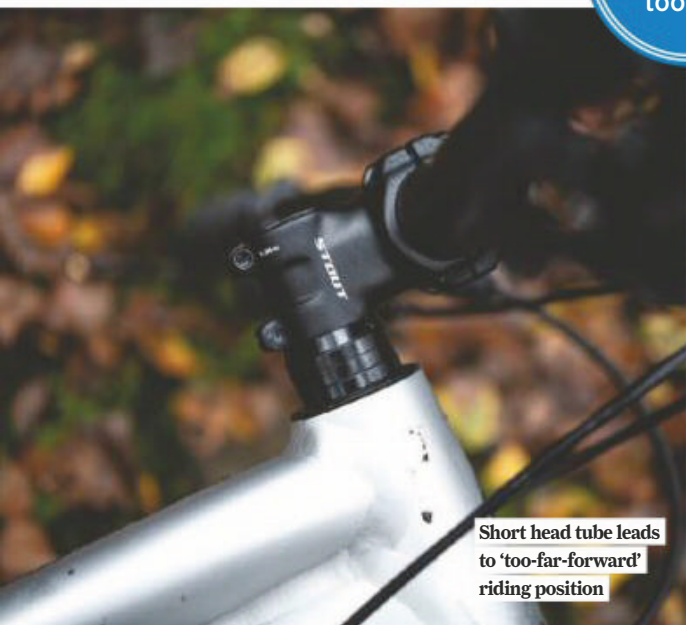
With a slacker head angle, lower BB height and extra length in the front end, the Fuse would have the attitude to match the ride quality of its superbly engineered frame. Maybe Specialized needs to roll out a Fuse Evo...





HIGHS
High-tech
frame
design

LOWS
Front end is
too low



Short head tube leads
to 'too-far-forward'
riding position



Skinny seatstays
add compliance to
boost comfort



Adjustable dropouts make
the Fuse Expert a super-
versatile machine

Conclusion

If we look back at the development of 29er full-suspension trail bikes, it's clear that many manufacturers were too conservative in their initial approach to geometry.

That was partly due to ignorance about the new wheel size, but it was also a consequence of trying to shoehorn bigger wheels into their preconceived norms of ideal trail bike geometry. With 29in wheels forcing brands to adopt longer chainstays, engineers quickly reacted with steeper head angles and shorter front ends to stop the wheelbase from increasing.

That's all changed though, and today the geometry of the best 29er full-suspension trail bikes looks very different to those early designs, and is now indistinguishable from the best 27.5in bikes. Eventually the same will be true of 29er trail hardtails, but we're not quite there yet.

The new Norco Torrent is close, but it falls short on one critical measurement, BB height. We've laboured this point already though, so let's offer a simple solution instead, fit 27.5in wheels. Every other dimension on the Norco frame is on the money, and while a new set of wheels isn't a cheap fix, it would drop the BB height by just the right amount to improve the riding position and handling. The smaller, lighter wheels would also be the shot in the arm the Norco desperately needs to inject some pace into flatter trails. Yes, you'd have to forgo some of the Norco's straight-line speed and stability, but we're convinced



Specialized Fuse Expert:
livewire on the trails with
an exciting, responsive ride

RANGE FINDER

Our test winner's stablemates

SPECIALIZED FUSE COMP 29

£1,249

Sharing the same M4 aluminium frame as our test winner, the Fuse Comp offers a similar ride quality at more affordable price point. The murdered-out black finish looks the business, and the only obvious downgrade that actually impacts handling is the switch to a spindly RockShox Recon fork. Even the weight remains competitive, as it only creeps up by 780g.



SPECIALIZED STUMPJUMPER ST ALLOY 29

£1,899

This is the entry-level bike in Specialized's full-suspension Stumpjumper range. ST stands for short travel — it pumps out 120mm instead of 135mm, like the regular Stumpy. For a small increase in price over the Fuse Expert, the build kit is much closer to Fuse Comp 29.



The Fuse Expert is much faster to react and is the more engaging bike to ride

the switch to 27.5in wheels would make the Torrent a more rounded package.

In fact, it is versatility that enabled Specialized to edge ahead in the ratings. With its more reactive handling and rapid response to pedal inputs, the Fuse really plays to a trail hardtail's strengths. Combine this with the relatively resilient ride of the sculpted alloy frame, and the Fuse Expert really can charge. So even though it doesn't steamroll over the

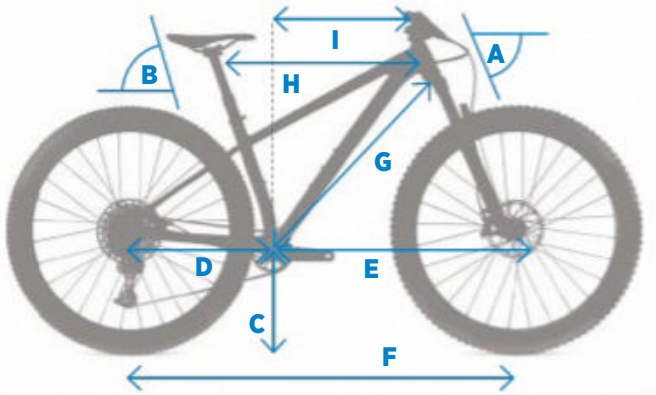


NOTES ON THE NUMBERS

Drop the BB to raise the ride

If you knew nothing about the Norco Torrent other than the geometry printed in the chart opposite, you could be forgiven for assuming that it was a modern full-suspension trail bike. Once you know it's a 29er hardtail however, the 325mm BB height stands out like a sore thumb. With no rear suspension to sag and drop the BB height, the rider is left perched on top of the bike.

Specialized is in a much better position with its 313mm BB height, but it could easily afford to go another 10mm lower — offsetting the short wheelbase for improved stability — and you still wouldn't have to worry about pedal strikes.



	Norco	Specialized
A Head angle	64.4°	66.3°
B Seat angle	74.9°	71°
C BB height	325mm	313mm
D Chainstay	424mm	420-435mm
E Front centre	812mm	761mm
F Wheelbase	1,233mm	1,181-1,196mm
G Down tube	757mm	736mm
H Top tube	630mm	635mm
I Reach	476mm	455mm

SPECIFICATION

This month's bikes at a glance

Make/model	Norco Torrent S2	Specialized Fuse Expert 29
Price	£1,845	£1,649
Weight	16.18kg (35.67lb)	14.12kg (31.13lb)
Contact	evanscycles.com	specialized.com
FRAME		
Sizes	S, M, L, XL	S, M, L, XL
Size tested	L	L
Frame material	Double Butted Cro-mo	M4 Premium aluminium
Suspension fork	RockShox 35 Gold	RockShox 35 Gold RL
Rear shock	N/A	N/A
Front travel	150mm	130mm
Rear travel	N/A	N/A
WHEELS		
Hubs	Novatec 110/148mm	Specialized sealed 110/148mm
Rims	e*thirteen LG1 29	Specialized SL 29
Spokes	Stainless double butted	Stainless double butted
Tyres	Maxxis Assegai EXO+ 3C Maxx Terra 29x2.5in	Specialized Butcher/Purgatory GRID 29x2.6in
GROUPSET		
Shifter	SRAM SX Eagle 1x12	SRAM NX Eagle 1x12
Cassette	SRAM PG-1210 11-50t	SRAM NX 11-50t
Rear mech	SRAM SX Eagle	SRAM NX Eagle
Crank	SRAM SX Dub Eagle, 30t	SRAM NX Eagle DUB, 30t
Bottom bracket	SRAM DUB BSA	SRAM DUB BSA
Brakes	TRP G-Spec Trail S	SRAM Level TRL
Rotor sizes	180mm	200/180mm
COMPONENTS		
Saddle	Fizik Taiga	Bridge Comp
Seatpost	X-Fusion Manic 150mm	TranzX 150mm
Handlebar	Norco 6061 DB alloy 800mm	Stout Riser 780mm
Stem	Alloy 50mm	Stout 3D-forged alloy 50mm
Rating	7	8

bumps as effectively as the Norco, it's much faster to react and more engaging to ride, actively rewarding rider inputs with instant acceleration and raw speed.

It's still got some way to go, though, before it matches the ride quality of 27.5in bikes like the Whyte 905. Still, it is great to see that Specialized is moving in the right direction with its latest trail hardtail — the Fuse Expert 29 a major departure from the more XC-focused hardtails Specialized pumped out in the past.

CONTROL TYRES

To make the testing process as fair as possible, we fitted Maxxis Assegai 29x2.5in 3C Maxx Terra EXO+ control tyres to both bikes in this test. Price £64.99 each, extrauk.co.uk





MY BEST TRAIL

Mtb's movers and shakers select their favourite places to ride



AS CHOSEN BY...

**ANDY MCCANDLISH,
PHOTOGRAPHER & VIDEOGRAPHER**



Andy has been taking award-winning photographs since the year dot, exploring his native Scottish lands in search of adventure, whisky and trails unknown

Of course I don't believe we were the first people to have turned wheels over the trails on the Isle of Harris, we just couldn't have been, but it sure did feel like it at the time...

Myself and friend Jamie had just been taken by a notion to go there after noticing a promising network of single dotted lines on the OS map. We both knew they could mean anything, from a surfaced, groomed singletrack, right down to a 'what-the-hell-were-the-OS-thinking?' wasteland of nothing but peat hags and tussock grass. But we had the time to go and investigate and neither of us had been to Harris — this was a long time ago — so we just packed tents and bikes and went. Those were the days.

Back at home we had marked possible routes out on the map, knowing they could come to nothing, but each time we found the trail on the ground we were absolutely blown away. Here we were in the middle of nowhere, with

literally no one around, and there was a picture-perfect trail winding away from the road and into the hills. So where it went, we followed.

I can still remember rounding corner after corner on the trail from Rhenigidale, watching this incredible crofters' trail, likely hundreds of years old, snaking away around the cliffs and crags in a perfect — and I mean perfect — singletrack ribbon. A foot wide, it just kept going and we kept following. Round headlands, over hilltops and behind gloriously aquamarine bays it

went and we were utterly made up. We had struck oil, discovered a seam of gold, cracked nuclear fusion, all at once, on these remote hillsides. It was a glorious feeling and we just kept riding for days. The nights were spent out on glorious beaches or high on heathery hills and I still vividly remember lying out on a Karrimat reading maps by the light of the sky right up to midnight.

You don't often get to discover a new trail but, when you do, it is always your trail. Harris is just that for me.

I remember rounding corner after corner, watching this crofters' trail snake away around cliffs and crags in a perfect singletrack ribbon

Photos: Andy McCandlish

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HUNT ENDURO WIDE WHEELSET, 33.5MM INTERNAL RIM WIDTH

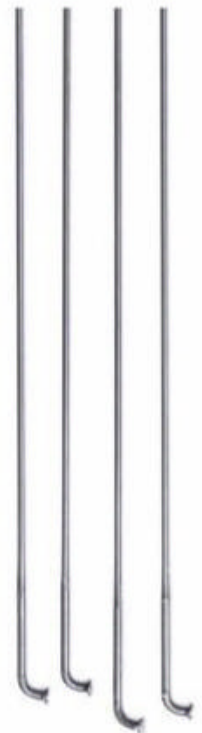


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